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MOTOR BOATING

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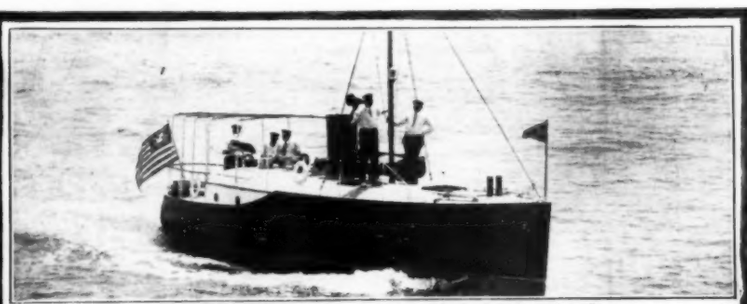

The "Dream," winner of the Bermuda Race winning for C. L. Lagen (owner) the James Gordon Bennett Cup and the $1,000 Cash Prize

Standard the Foremost Engine of the Hour Shown by the Winning of Every Big Cruiser Race of 1912

BUT THE BIG, IMPORTANT THING IS THE WAY THESE ARE WON—THE ENGINE'S CONDITION AT THE FINISH.

Quoting the crew of the "Dream" in the Bermuda race, "The STANDARD ran **without a miss,**" when all the way the "**Dream**" listed so that "the machine was nearer the horizontal than the vertical," and "At the **finish the engine,** covered with rust, was in perfect running condition."

Such things show what the **owner operator** obtains from the STANDARD under his own control and management. Every man on board the "Dream" was an amateur.

BUT THIS IS WHAT PLACES THE STANDARD BEYOND ALL COMPARISON.

"After the engine had been left untouched for two days we went down, turned her over and sailed about the island and back to Philadelphia, again the winner of the return race."

THAT IS THE FINAL TEST OF AN ENGINE—TO RUN IT WITHOUT ADJUSTMENT AFTER GOING THROUGH WHAT THE "DREAM'S" ENGINE WENT THROUGH.

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It is important to know the condition of the different engines at the Finish. It vitally affects your comfort, your pleasure and your purse.

Your STANDARD means greatest comfort, greatest pleasure and greatest economy in all ways. You should order now for spring.

Back of the guarantee of this engine is the

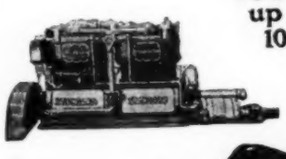
STANDARD MOTOR CONSTRUCTION COMPANY
178 Whiton Street - - Jersey City, N. J.

Overbrook, Pa., Aug. 27, 1912.

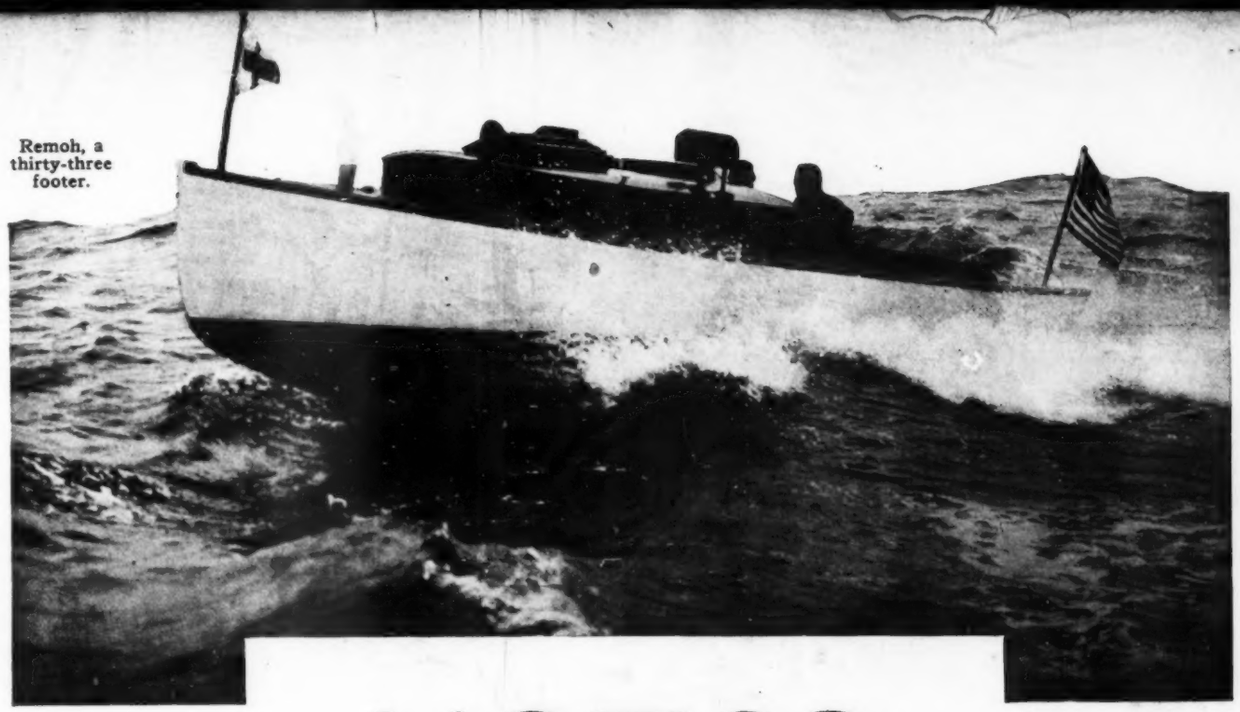
Messrs. Carman & Bowes,
Philadelphia, Pa.

Gentlemen:—After winning the race to and from Bermuda with my motor boat, the "Dream," I am firmly convinced that no engine other than the "Standard" would have given me the same service. My engine ran without a miss during the entire time of both races, and although it was the smallest engine and the smallest boat that ever made the trip, I consider it particularly meritorious from the fact that Mr. Sproul, who ran the engine, was an amateur. The consumption of gasoline and oil was unbelievably small, and the engine room was comfortable at all times.

Very truly yours,
C. L. LAGEN.



"Power up to 1000"



Remoh, a thirty-three footer.

MOTOR BOATING

JANUARY 1913

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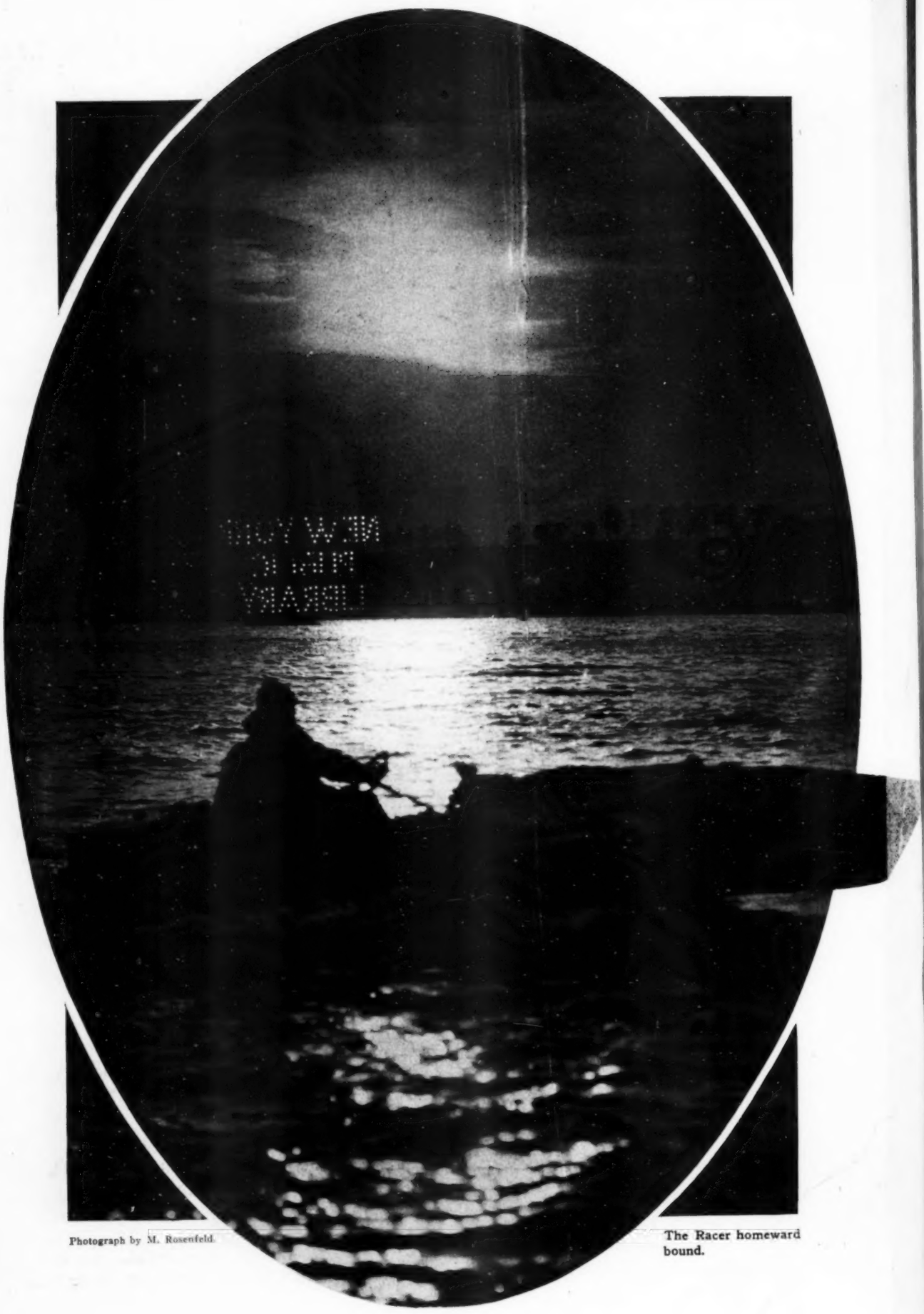


Photograph by M. Rosenfeld.

The Racer homeward bound.

Beating the bugeyes into Solomon's.

Running into Norfolk harbor.

Racing With Winter Through Dixie Land

Despite Snow and Ice the 25 footer Querida Laden with Typewriter and Camera, Shivers on Towards Florida's Coral Strand. The Second Stage of the 3000-Mile Cruise.

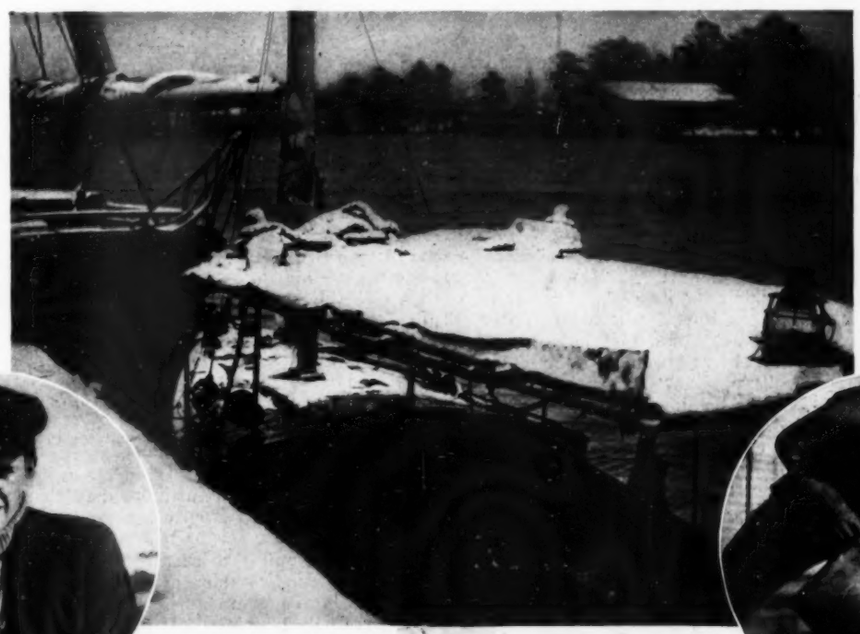
By Bradford Burnham.

Photographs by Alfred F. Loomis.

Since dropping anchor in the December issue lots of things have happened to Querida and her crew—lots of interesting things, as we predicted. In fact the "Cruise to Mecca, U. S. A." is being made with the very purpose of digging up interesting things to tell about and given this sort of material to start with, Mr. Burnham has the faculty of making a mighty interesting story of it. Read it and let us know what you think of it.—Editor.

A FRIEND of mine once told me that November was a good month to cruise southward in. He appeared to be a sane, intelligent sort of a fellow and to speak from experience. We have since learned that he is employed by Uncle Sam as ambassador to Greenland and when at home works in an artificial ice factory. But he doesn't know what cold is! From our recent and painful experience, in our judgment, the best time of year to cruise southward is June. By starting early in the summer you will strike the southernmost, and therefore coldest, portion of your cruise in the benevolent, balmy month of August. When the folks up North are wiping their brows and gulping down iced tea by the bucketful, you in the cool and shady southland may occasionally find a day when you need only one sweater. For, paradoxical as it may seem, the more miles we stroll off toward Mecca, the colder it gets!

If you are inclined to doubt this assertion, or to good-humoredly put it down as an excusable exaggeration, you should follow our log and see how we found it: 48 degrees at New York, 38 degrees at Annapolis, 28 degrees at Elizabeth City, and so on. According to this rate we shall find it minus 2 at Key West, but we're hoping for a warm spell about then. Or, better still, you yourself should have been with us on a certain morning when we turned out to find two inches of snow on deck and more rapidly descending on the land and waters of North Carolina. Right gladly would we have remained quiescent under our seven thicknesses of heavy blanket, till you had got the stove lighted and, by sealing the cabin to the best of your ability had with its aid, consumed all the oxygen therein and raised the temperature to fifty degrees. For never have we turned out on such a day, with the mercury registering four below (freezing), that things haven't happened. Sweater number four is discovered wet and stiff with ice; your pajama string is invariably found to be in a hard knot; carbon has stopped up the miserably minute aperture in the stove and said warmth restorer won't work till a bent pin is introduced and the refractory carbon dislodged. N. B. Always use a pin for this operation. The skipper tried a needle once: it

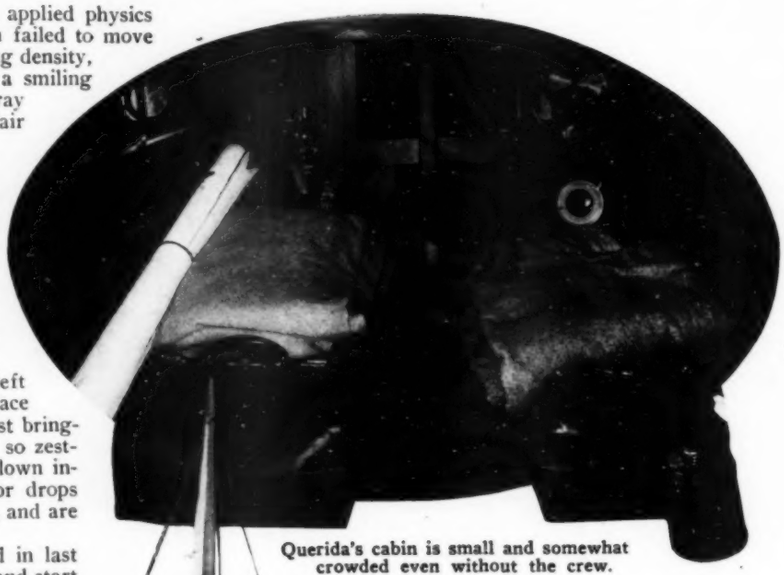


Waking up one morning in the Polar regions of North Carolina, we found a snow storm in progress and the thermometer four degrees below (freezing).

The Chief.

The Skipper.

broke off in mid-channel; and all the chief's applied physics and pet theories of expansion and contraction failed to move it. Over all the gloom hangs with knife-cutting density, thick as the oil coated bilge;—till suddenly a smiling sun pokes itself up above the horizon of gray sea, you joyfully note a rising barometer, a fair tide, a light off shore wind. With a mighty effort you smash through the ice on the top of the bucket and scatter the icy drops over face and neck; rubbing same carefully on a chocolate colored towel to prevent chapping. Twenty minutes later and the chief's oatmeal warms the in'ards, a few minutes vigorous exercise with the bilge pump attends to the rest of your anatomy; a liberal priming and a simple twist of the fly-wheel and the cold but obliging Fay and Bowen gets down to the business of the day, and the gloom is left astern with marvelous rapidity. In its place comes the glory of your independence, the zest bringing dash of icy spray, while a few drops not so zest-bringing choose the inside route and trickle down inside the four sweaters and oilers; the harbor drops astern, you lay a course for an invisible point, and are off on another day's run.



Querida's cabin is small and somewhat crowded even without the crew.

Probably before you had a chance to read in last month's MoToR BoatinG of the preparations and start of Querida II on her momentous cruise to Florida waters and beyond, the rain stopped coming down on the waters of the Delaware and Raritan Canal, where we left you. At any rate we didn't linger to find out, but locked out upon the tide racing Delaware, and next morning let it help us on our way toward Philadelphia. We found the river-front of the Pennsylvania metropolis enjoying its noon day siesta,

Even the loss of the awning forgotten when reading the mail from home.

and not wishing to disturb its calm repose, pursued our solitary way to where Tinicum Island makes a sheltered anchorage at Essington, Pa., for the beautiful homes of the Philadelphia and Philadelphia Corinthian Yacht clubs and for the large yard of the Essington Shipbuilding Co. Here we lingered longer than was our desire—the hospitality and steam heat of the Philadelphia Corinthian Club were tremendously enjoyable. Our pause was the result of a sudden determination to have a clutch substituted for a reversible propeller.

At about this stage of the game the first indications of hookworm began to make themselves manifest. We had looked with apprehension on its possible assault, but never dreamed the dread reptile would dare to invade northern territory. Of course it may have been the cold, or it may have been, in the case of the chief, the fact that he had been developing plates and washing them off with little pieces of antiseptic cotton till 3 A. M. the night before; or, in the case of the skipper, that he had been glued to the steering wheel all day in a mean head chop sea. Whatever the cause may have been, it became evident that nothing short of shipwreck, tidal waves, or the promise of a check, would induce the chief to get up mornings before eight A. M., nor the skipper to stay up evenings later than nine P. M. This would have been an ideal arrangement had we been intending to run twenty-four hours a day, and taken turns sleeping, but since nothing but an Eskimo could have run nights in a head wind and survived the cold, we found an early start and an early afternoon harbor with the rest of the day for thawing out, the theoretically ideal arrangement. We have now attained a practical working basis which comes nearest the attainment of this ideal. The skipper gets up first mornings, lights the stove, and gets the water boiling for the oatmeal while the chief remains supine. In return for which service the chief washes the dinner dishes in the evening, an operation as abhorrent to the skipper, almost, as the packing of an outside stuffing box when the stern is still semi-submerged in ice water.

Somehow or other, we made a long run on the Delaware, ran the Delaware and Chesapeake Canal at pretty nearly their heart-rending legal speed of four and a half miles an hour; moved down Back Creek and Elk River, entered the upper stretches of Chesapeake Bay and began to know what real cold was. For the night we entered one of the most convenient and handy harbors in the upper Chesapeake. Contrary to most southward bound boats we did not cross the Bay immediately, following the prescribed course from Turkey Point to Poole's Island Light. Instead, we kept to the eastern shore—it is deep, too, nearly all the way—and entered Worten's Creek, which empties into the Bay at a point opposite the northern end of Poole's Island. Running up this little bight for a mile or so we come to a sand spit making out from the southern shore, which effectually landlocks an inner harbor where there is never the slightest roll.

Annapolis was made without incident other than that on account of rough water we put in to Bodkin Creek, which empties into the Bay just above Sandy Point, but finding on the margin of that alluring haven a building given over to the manufacture of what smelled to be a combination of mercantile asafoetida and the ingredients of a powerful fertilizer, we unceremoniously beat it and welcomed the return to the spume-tipped waves with unexpected fervor. We skinned around Sandy Point inside the lighthouse, and ran up Annapolis roads with the bugeyes in the gathering dusk.

Norfolk was the next white-collar port on our schedule after clearing Annapolis; and we had planned to make it in three days. We could have done it in two in the summer time, with the warm evenings and early mornings, but at this time of year one cannot plan for more than six hours' running per day if he would keep from complete freezing. In the fall of the year, too, there, seems to be a little varying program of "sun up; wind up." At least, so we found it for several days. We left Annapolis under a moderate northwest breeze and clear sky shortly after sunrise, and before we had proceeded more than fifteen miles the wind had increased to high, was blowing very gustily and kicking up a following sea which became so troublesome that we put into Herring Bay. This appears to be a very open harbor, consisting merely of a broad bight on the western shore and sheltered only from SW, W

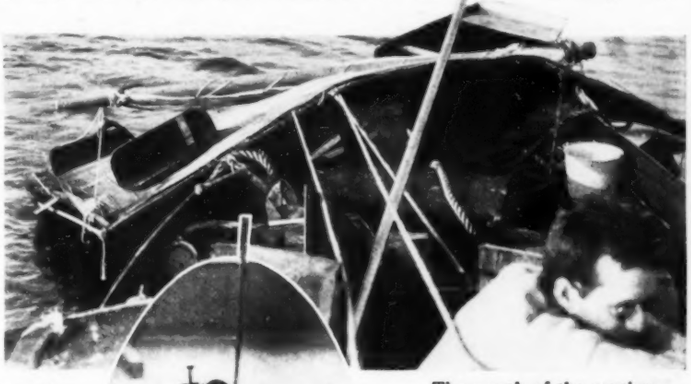
and NW winds, but a long bar makes out from the point at the north, and acts as a good breakwater, while a boat drawing less than four feet can follow up a little creek which enters the bay at the northwest corner, till he finds absolute calm.

Two more days of stiff northwest winds behind us were then in order. The first made us put into Solomon's Island about noon. The fame of Solomon's as a yacht anchorage is well known, and its inhabitants, to the number of eight hundred, are very proud of their beautiful and unique harbor, at the junction of four small rivers and one large one. Solomon's is the home par excellence of the bugeye and the skipjack. Nowhere else are these unique craft, with their preposterously raked masts and their triangular sails, found in such numbers. Power boats, strong, powerful fellows, built for business, are replacing the more romantic sail craft on Chesapeake Bay, slowly but steadily; but at Solomon's the bugeye, large and small, together with its little one-masted sister, the skipjack, still reigns supreme. The evening stillness in the harbor is broken by the sound of chopping wood and the melody of some quaint Southern air. And long before to-morrow's dawn this motley gathering will have floated out again to spread themselves over the surface of the bay for another fourteen-hour day of hard, wet work in the biting cold and bitter wind. A queer corner, certainly, is Solomon's.

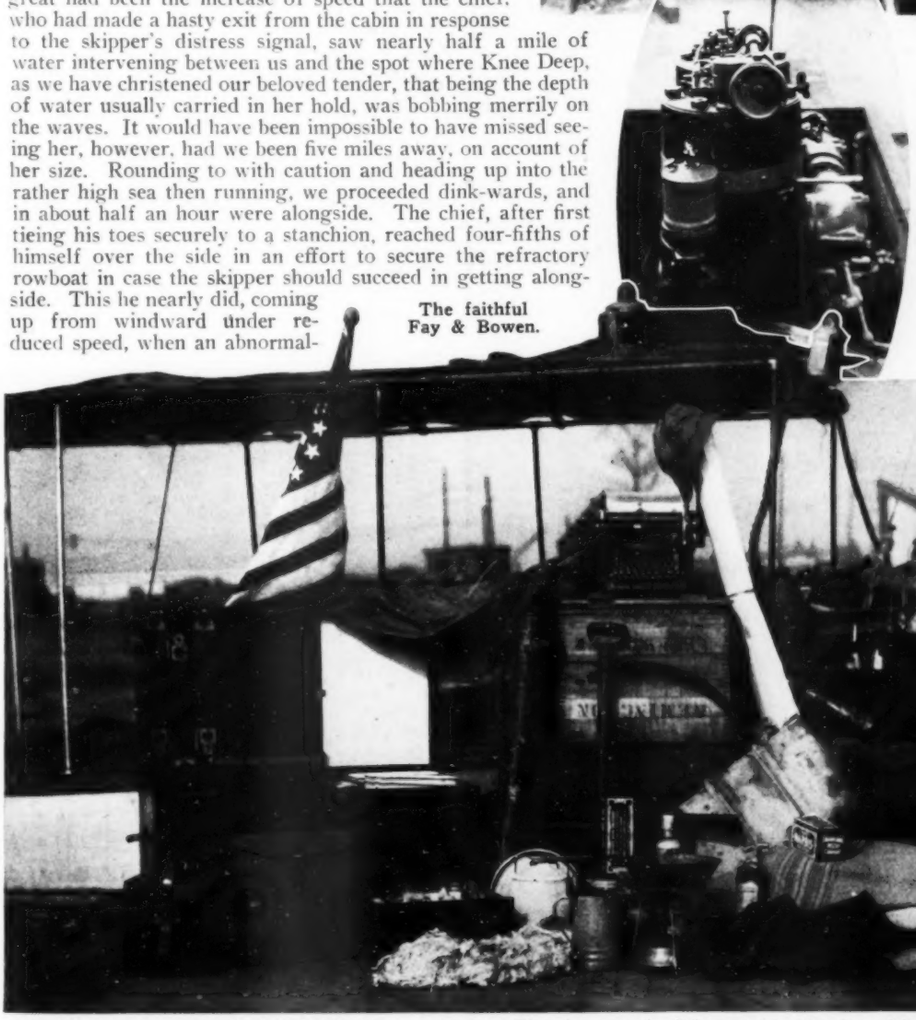
Next day we crossed the mouth of the Potomac, and the skipper put on another sweater. But just before this episode a near tragedy occurred. The skipper was at the wheel, running along before a fair wind, when suddenly Querida leaped forward at excessive speed. Looking around to determine the cause of this sudden spurt, he perceived that the ancient, honorable and timeworn painter to the gigantic dink had parted in twain, merely a frayed and stringy end remaining attached to the cleat. So great had been the increase of speed that the chief, who had made a hasty exit from the cabin in response to the skipper's distress signal, saw nearly half a mile of water intervening between us and the spot where Knee Deep, as we have christened our beloved tender, that being the depth of water usually carried in her hold, was bobbing merrily on the waves. It would have been impossible to have missed seeing her, however, had we been five miles away, on account of her size. Rounding to with caution and heading up into the rather high sea then running, we proceeded dink-wards, and in about half an hour were alongside. The chief, after first tieing his toes securely to a stanchion, reached four-fifths of himself over the side in an effort to secure the refractory rowboat in case the skipper should succeed in getting alongside. This he nearly did, coming up from windward under reduced speed, when an abnormally large wave spun the bow about—and it struck Knee Deep squarely amidships. The latter listed heavily to port, but righted half filled. The same tactics were employed a number of times, till finally the bunch of boards was captured and we towed her the rest of the day at the end of the anchor cable, where she wallowed along half filled with water.

"All was *not* quiet along the Potomac" on Tuesday, November 19, 1912. At least we didn't think so. As we slowly brought Point Lookout at the northern side of the entrance on our starboard beam, and labored on towing Knee Deep, then Waist Deep with her cargo of Chesapeake Bay water, we encountered a lumpy sea, which tossed us about a bit, but otherwise didn't annoy the good ship any. But when foolishly trying to save time and gasoline by crossing the shoals inside of Smith Point light we found the dirty, heavy chop which one would naturally expect to encounter on a rough day in six to twelve feet of water. Two or three mean ones had slapped solid water over our deck, when "snap" went the forward port stanchion of our awning. The others followed suit in rapid succession, and down came the whole business on the cockpit and the heads of officers and crew. Neither of the latter being Atlases, we objected, and worked free of the mix up, and as soon as one of us got a hand through the débris onto the engine throttle, we slowed down. A small line was fastened to the awn-

(*Continued on page* 34.)

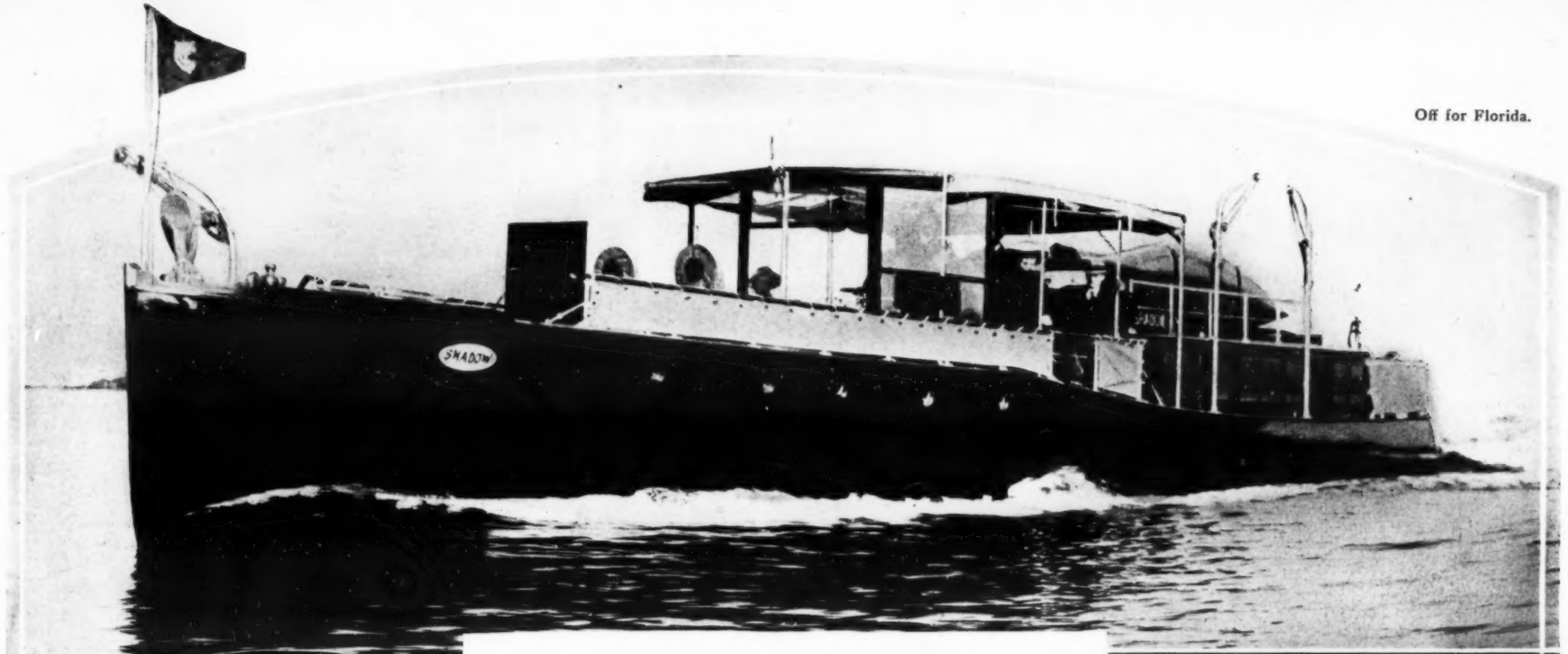


The wreck of the awning.



The faithful Fay & Bowen.

Querida's equipment looks formidable for a 25-footer. The chest to the left contains Mr. Loomis' complete photographic outfit, and that to the right is the cook box.



Off for Florida.

SHADOW.

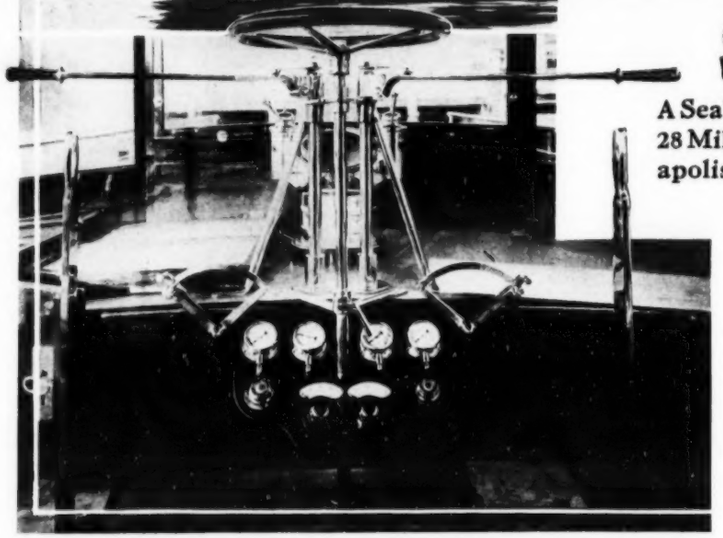
A Seabury 66-Foot Express Cruiser with a Speed of 28 Miles an Hour, for Mr. Carl G. Fisher of Indianapolis, Now on Her Way from New York to Florida.

Length overall..... 66 ft.
Length on waterline... 65 ft. 6 in.
Beam ..... 10 ft. 6 in.
Draft ..... 3 ft.

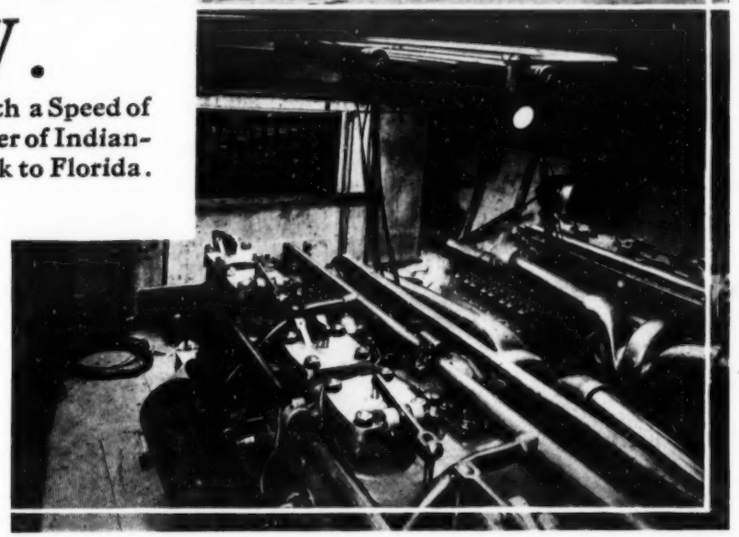
Power plant—Two 6-cylinder 8 in. x 8 in. Speedway motors.

Speed—28 miles an hour.

Designers and builders—Gas Engine & Power Co. and Chas. L. Seabury & Co., Cons.



By means of an elaborate system of controls Shadow's motors are handled from the bridge.



The two 6-cylinder 8 in. x 8 in. Speedway motors are installed under the raised deck.

A TRIP TO NOWHERE
IN A SIXTEEN-FOOTER

BY HERBERT ERNEST HANCOCK

SKETCHES BY HAL COFFMAN

We said something in November about the small boat being the logical starting point in the career of the motor boatman. It's more than that, for it offers so much of the real thing in the line of sport and experience that many prefer to stick to it instead of graduating into the bigger boat class. Mr. Hancock and Mr. Coffman not only got a whole lot of fun out of their cruise but were considerate enough of the rest of us, not to mention posterity, to pass it along. This is the second half of their collaboration which was launched in November—it needs no further introduction.—Editor.

Mumbling a weird incantation that sounded like "dambeansburnt."

Part Two

THERE are times of great peril when, somebody has said, all of your past life flashes before you. We had not believed it up to the time that wave swept over us, but now we take it all back. Vividly all the scenes in our dark past 'rose before us. The mocking face of our boyhood's school teacher leered out with menacing finger pointing to the piece of chewing gum we had plastered on her chair; the corner grocery man's phantom form towered threateningly above us, one ghostly hand waving towards barrels and barrels of "sweeties" that we had swiped in the days of long ago, and other of our deeds even more dark and bloody forced themselves into our fevered mind.

Then we suddenly awoke to the fact that the Helen H's engine was still going, but that we were floundering around in several inches of water with the chef's windward foot kicking us in the stomach.

We grabbed the wheel and swung the launch's nose to the waves. Then we alternately prayed and swore; the prayers being for safety, and the curses being for the chef whose desire for alcohol (for stove purposes only) had oozed out entirely.

Well, we got back to the creek. Don't ask us how. We don't know. We do know, though, that one particular engine never missed a chug and is the sole reason for us being able to write this story. If only an engine could appreciate it we would see that one of Andy Carnegie's medals for life-saving was hung on its timer. As it is that engine needn't worry about it's old age for we with grateful heart will see that it has a home forever, and when it finally dies an appropriate epitaph will be inscribed on it's tombstone as follows:

"Here lies an engine old and rusted,
Motionless, and almost busted,
But while it lived—Oh, sailors hark!
'Twas never known to miss a bark."

The chef never spoke a word all the way back. He may have tried, but all we heard were a few gurgles like some strange monster in distress. The remainder of the day was spent in pumping out the Helen H., repairing the sprayhood which looked as though it had been punctured, and drying out our clothes.

The chef had gone silently ashore, and we noticed him wandering mysteriously along the sand dunes. When we had covered the boat for the night and rowed to the bank a pleasant surprise awaited us. The chef had managed, with the aid of kerosene, to start a wood fire going, and that evening we sat down to as fine a meal as any gourmet, or is it gourmand?—could desire.

"Coff," we said at last, "all is forgiven. You are the finest cook on Lloyd's Neck."

He beamed on us delightedly and dipped us out another helping of something which was delightful, but indescribable. In fact, we have never been able to find out just what Coff did put in that big stew pot. All we had were beans, onions, green peppers, tomatoes and potatoes, but out of this assortment the chef developed a dish fit for the gods, if gods ever get hungry.

Secretly, we think the chef possesses some magic formula handed down from the old Egyptian necromancers, and in fact we have at times heard him muttering strangely while bending over a steaming pot. Once we asked him what he was saying, only to get an untelligible reply that sounded something like "dambeansburnt" which we are sure is some substitute for "abra-ca-dabra," or other witch word.

Monday night passed without incident and Tuesday morning beamed upon us in good old summer style. A plunge into the creek was the first thing on the programme, and then breakfast consisting of ham and eggs, the national breakfast food.

We had not been able, because of the weather, to explore our surroundings, but when we did we found all kinds of delights awaiting us. The creek was swarming with spairing, and immediately the chef set up a howl for a net.

We promised to get one within the day, and then walked along the creek banks looking for other surprises.

All at once we leaped about three feet into the air and faced the chef with scared face.

"What the dickens——" he started to exclaim, but we pointed with trembling fingers to several enormous imprints of webbed feet in the sand.

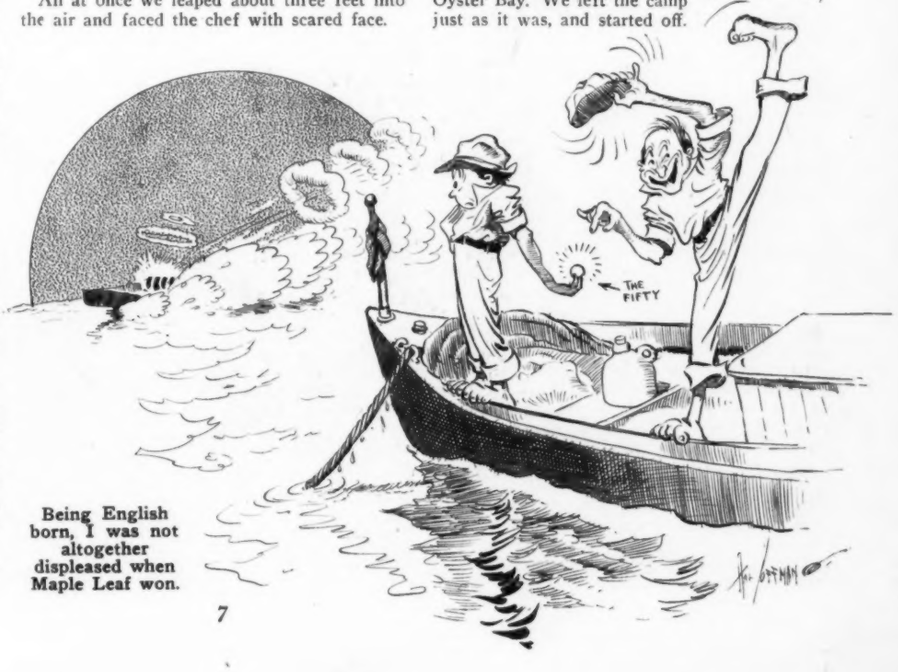
"Wha-a-at's that?" we queried tremulously, "it must be an eagle that made those marks."

We further stated we had heard that eagles could carry away sheep, and as any good-sized sheep outweighs us we decided that Lloyd's Neck was no place for a minister's son.

The chef by this time was laughing immoderately. He assured us that it was only the marks left by a heron or crane, and a moment later we saw one of them flying over the salt marsh nearby with a wriggling snapper in its mouth.

It would be hard to describe all the wonders that we found in that delightful place. Simple wonders, it is true, and things that perhaps would make a native laugh to hear us enthuse over. But to two city boys, cooped up for fifty weeks a year amidst skyscrapers and subway jams, every little bit of nature appealed.

For instance, on one occasion we found a tiny gar fish. We had never seen one before, and it wasn't until our trip was over and we were describing it to our adviser, Larry Huntingdon, that we found out what it was. Then we constantly saw birds that were absolutely strange to us, and which proved a continual delight. Like a couple of kids we cheered when we found a new tributary to the creek, and before we left we had proudly named several places in honor of our discoveries. Our explorations ended we decided to make another dash for Oyster Bay. We left the camp just as it was, and started off.



Being English born, I was not altogether displeased when Maple Leaf won.

Soon the bay lay before us as calm as a bed sheet, and looking as innocent as a newly-born babe. It was hard to think that only the day before it had been kicking itself into hysterics, and doing its best to use the Helen H. for a football.

We entered the bay according to the chart, making a wide detour around the lighthouse that greets you half-way inside. For the benefit of small boat owners, however, we will state that almost any part of the bay can be traversed without danger to a launch not drawing over three feet.

At Oyster Bay we found a gasoline tank and a general merchandise store that supplied all our wants even to the fish net., and after seeing the town and getting a glimpse of "Teddy's Roost," as the natives call Sagamore Hill where Uncle Theodore caches his big stick, we returned to camp.

On the way back we learned from passing boats that the Maple Leaf IV, had won the second race for the International Motor Boat cup, leaving a "rubber" to be raced for on the following day.

We, being English born, almost fell overboard with hilarity at this joyful bit of news, and shouted gleefully at the chef who glowered at us.

"Never mind," he growled, "We'll beat you to-morrow."

"Bet you a whole fifty cents you don't," we yelled, recklessly, and the chef grimly announced that the mighty wager was on.

In the morning we used the net, catching enough speiring in twenty minutes to satisfy all the snappers in the Sound. Running the Helen H., to the mouth of the creek we soon had enough of the shiny fellers for lunch, and once again the chef did himself proud.

Then we left for Huntington Bay and the race.

We had several hails from Huguenot club boats that had journeyed up from New Rochelle, and an especially hearty one from the skipper of "Wee Peter Pan," the pride of our fleet of speeders.

Not wishing to give Mr. Lloyd a stiff neck (English joke) we broke camp that afternoon, and gasolined into Lloyd's Harbor which, as the chart will show you, branches off to the starboard when running into Huntington Bay.

For beauty no other place taken in on our trip equalled this. We ran almost as far as we could go with cool, natural woods lining the banks each side of us in inviting fashion. Finally we picked out a little clearing for our camp, and just as darkness fell finished rigging up a suitable shelter.

Vice-Commodore Brown, of the Northport Yacht Club, is a most hospitable host.
* Water jugs—nothing to do with hospitality.

The night was superb, and once I was moved to song. This, the chef said, was the only marring incident of the evening, after which I subsided into a cold and stony silence.

We slept out under the stars that night, and I dropped off dreaming I was king of a strange land full of baked-bean trees and ham-and-egg plants. .

"And where to-day, skipper?" asked the chef, as he emerged from his morning dip, glistening like a bronze statue in the sunshine. (As a matter of fact he looked more like a Hoboken Indian with four days' growth of beard on his chin, but that "bronze statue" stuffs sounds classier.)

We announced that Thursday's programme consisted of an exploration of Northport Harbor, and a visit to the Northport Yacht Club which, we had been reliably informed, exchanged courtesies with the Huguenot fellers.

In the days when we were "an humble reporter" we had had occasion to visit Northport to attend the trial of a certain gentleman who had playfully emptied a shotgun full of slugs into his father-in-law's tummy. It was therefore with much pleasurable anticipation that we guided the Helen H. into friendly waters, and tied up to the Northport Yacht Club's float.

Before proceeding further let us remark that Huntington Bay and its inlets, Lloyd's Harbor, Huntington Harbor, Northport Harbor and several other branches are worth a cruise all by themselves. The scenery is a joy forever; the banks present innumerable ideal camping spots and the waters teem with fish. What more can mortal man ask?

(*Continued on page* 57.)

The New Plans of the A. P. B. A.

How the American Power Boat Association will Attempt the Much Needed Reform of the Sport and Something About the New Rules for 1913.

THE annual meeting of the American Power Boat Association, formerly held late in February of each year, was this season moved forward some three months and held in New York City November 26th, with 44 of the 138 clubs represented. The change was a most welcome one and the present racing rules were thoroughly gone over and revised so that it is now possible to announce the rules for 1913 in time to be available for those contemplating building craft for next season's events.

In regard to the rules themselves, there were no radical changes effected, simply a few refinements of those now in vogue, tending to discourage the building of freak boats and placing the various types eligible for the different classes more on a par.

The same definition of a hydroplane which proved very successful during 1912 still holds, with one exception; that is, that one of the characteristics which determines a hydroplane shall be a rating of over 17 times the square root of the load waterline length instead of 16 times.

The definition of a cruiser was modified so that the glass cabin boat will be no longer classed as a cruiser. An additional requirement for a cruiser is that she must have a waterline beam of at least one-ninth of her L. W. L. + 3 ft.; for example, a boat 36 ft. on the waterline must have a waterline beam of at least 7 ft. and so on. This is undoubtedly a very wise move as it will eliminate many boats which have heretofore raced as cruisers but, in reality, were not much more than speed craft.

The limited classes for speed boats were thoroughly revised and brought up to date. These classes have never proved very popular, due, no doubt, to the fact that the restrictions did not conform with standard manufacturing practice. The new classes allow engines of all standard makes, both two and four-cycle, to compete upon an equal basis, depending upon their cylinder volume. The selection of the various volumes were based upon actual engines manufactured and the weights of the hulls upon the proper size of scantlings, etc., rather than upon any theoretical consideration. These classes should be a great stimulant to scratch racing and promote the building of many very fast, yet perfectly seaworthy boats, at a moderate cost.

Another innovation which should prove a popular one is the provision for the disqualification of any boat that attempts to get into the wake of another racer and be drawn along thereby. This particular point is of special importance in races where both cruisers and open boats are entered, as it had become a common occurrence for one of the little fellows to get in the wake of a cruiser and, by staying there during the entire race, was easily able to defeat the rest of the competitors in his class.

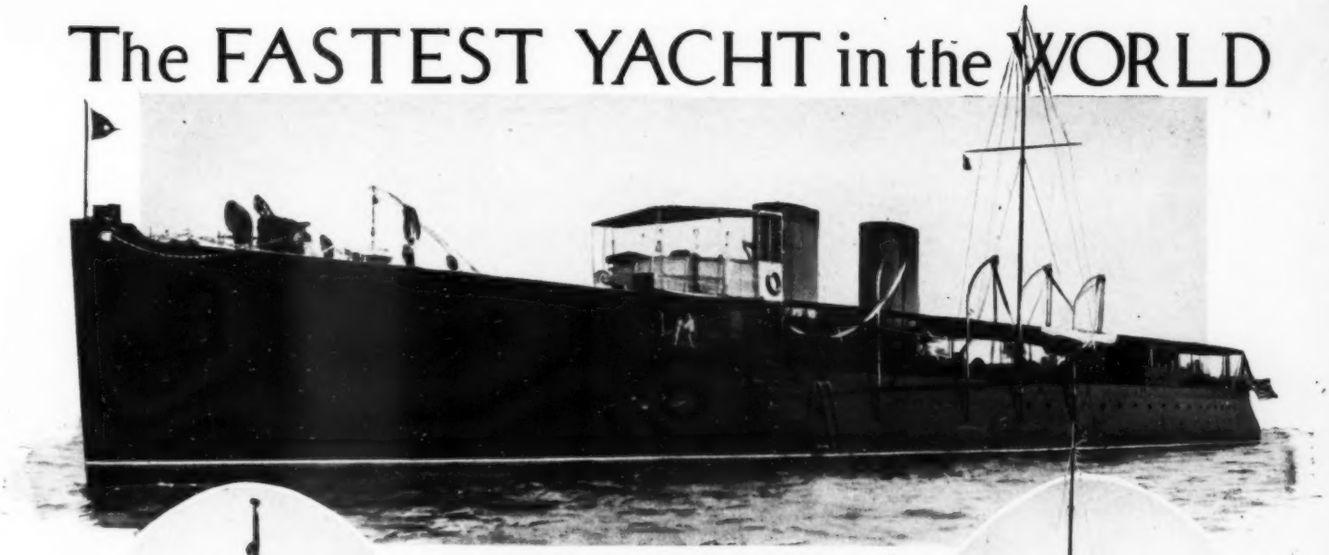
Aside from the actual changes in rules, several decided steps in advance were taken by the association. The council had been laboring for many months on the question of a more controlling policy rather than a simply advisory one, as it had been in the past, and the suggested changes that they brought before the delegates met with hearty approval and were all unanimously adopted. One of the most important of these was the adoption of a rule providing for the sanctioning of all events where a specific title is involved. A sanctioned race must be held over a course surveyed by an official surveyor, the boats measured by the association measurer or an assistant and timed by an official timer. The appointment of official surveyors, measurers and timers with assistants was also provided for. The titles and dates for all sanctioned events are to be approved also.

To care for the details of sanctioning the events and supervising racing in general, a racing commission consisting of three members was established and President Koerner appointed A. K. White of Atlantic City, as chairman; R. B. Clark, of Philadelphia, as secretary, and F. K. Lord, of Bayonne, N. J., on this commission. An official certificate will be furnished the winner of each sanctioned event and a duplicate one sent to his club, in addition to the results being published in the Association Year Book. In this way it is hoped to be able to keep an accurate record of all events and see to it that the speeds made are accurately recorded. To obtain a sanctioned event it would be necessary for three or more clubs to apply for same before July 1st of each year.

Another perhaps radical step was the provision that only amateurs would be allowed to steer boats in any sanctioned race. An amateur was defined as follows: One who participates in motor boating for sport as distinct from gain; one who acquires nautical experience through the love of the sport, rather than through necessity or the hope of gain. No person who follows the sea as a means of livelihood, or who has accepted remuneration for services in handling or serving on a yacht or motor boat or shall, after 1912, race for a cash prize, except in an ocean race of over 600 miles in length, shall be considered an amateur. Unless otherwise specified by the race committee in the circular of conditions, each boat in any race, whether sanctioned or not, must be steered by an amateur member of a club belonging to the association.

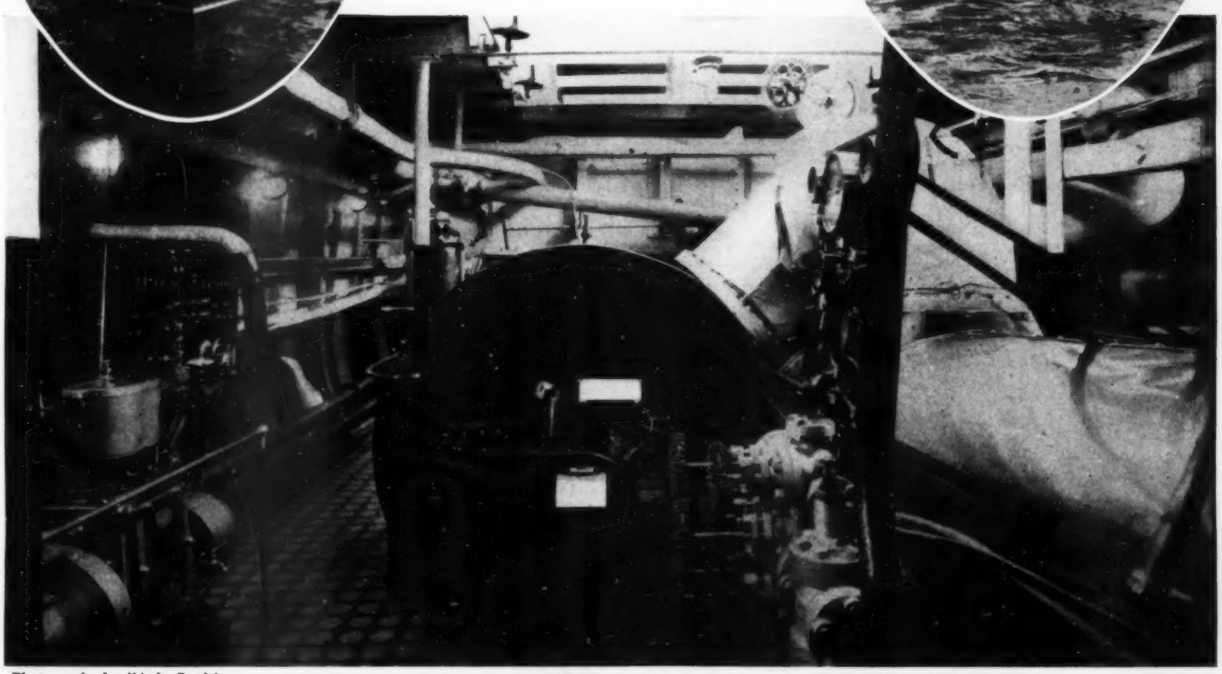
Cash prizes are prohibited for any races whatsoever, excepting in deep sea races of 600 or more nautical miles where special preparation and equipment is required by the race committee. The 1912 officers were re-elected.

The FASTEST YACHT in the WORLD



WINCHESTER

THE new Winchester is said to be the fastest yacht in the world. She was designed by Messrs. Cox & Stevens of New York City for Mr. P. W. Rouss to replace his other Winchester, and was built by Yarrow. Her power plant consists of two Parsons turbines aggregating 6,000 H.P. and driving twin propellers 4 ft. in diameter at 1,100 r.p.m. Oil is used as fuel for her Yarrow water-tube boilers instead of coal. Winchester is 205 ft. over all, 204 ft. on the waterline with 18 ft. 6 in. beam and 6 ft. draft, and her displacement is 200 tons. She made the run across the Atlantic under her own power and proved herself a thoroughly able sea boat in every kind of weather met.



Photographs by Edwin Levick.

Winchester's engine room, showing one of her 3,000-h.p. Parsons turbines.

UNCLE SAM'S MODEL TESTING TANK

How Motor Boat Designers are Taking Advantage of the Government Model Towing Facilities and How the Tests are Conducted.

By Waldon Fawcett.

Until very recently the facilities offered by the Government seem hardly to have been considered seriously by the designers of motor craft, but in the development of the past few seasons in the designing of fast hulls the testing tank has been invaluable. It has shown the relative advantages of a host of radical types of underbodies without the necessity actually of constructing the boats and has enabled the designer to forecast within very close limits just what speed his design is capable of and what power will be required to develop this speed.—*Editor.*

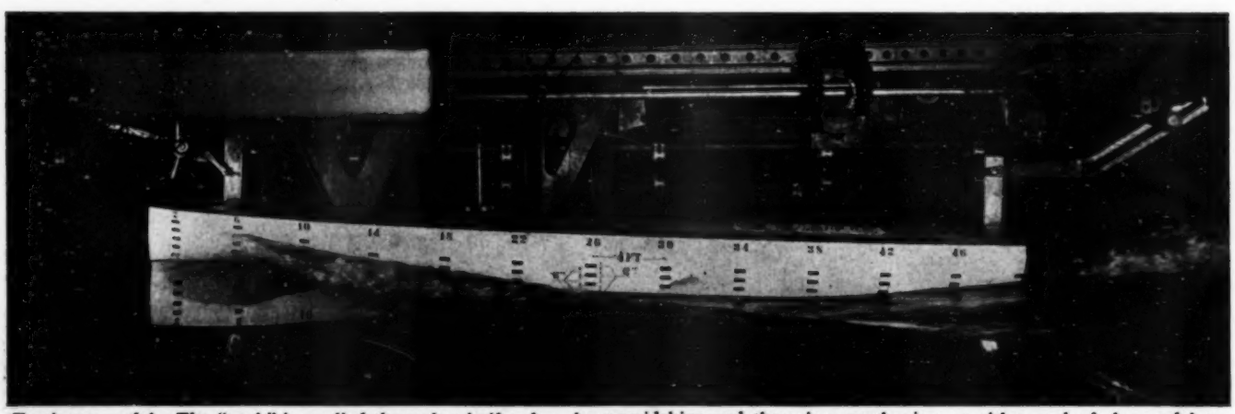
DURING the past few seasons the aid of the United States government has been enlisted by numerous designers, builders and owners or prospective owners of motor boats, who are preparing boats for the important racing events. The most highly appreciated assistance rendered by Uncle Sam at such a juncture comes through the placing at the disposal of motor boating interests of the testing tank or experimental model basin maintained by the Bureau of Construction and Repair of the United States Navy Department.

The placing of the experimental model basin at the disposition of boat designers and builders is one of the most important of the present activities of the Federal government on behalf of motor boating interests. Such utilization was, in effect, provided for when the model basin was constructed some years ago, for the law empowering the Navy Department to construct the big tank authorized experiments to be made for private shipbuilders, provided they defrayed the actual cost of same. Some designers and builders of steam yachts, in which speed was a prime requisite, availed themselves of the facilities of the governmental tank almost from the date of its establishment, but it has only been within the past few years that motor boating interests have awakened to its value. Moreover, inasmuch as such tests involve an expense in the case of each boat of from $100 to $400, it may be surmised that our present-day creators of racing motor boats are very much in earnest.

The primary function of an experimental model basin, such as that maintained by the national government, is to afford means for substantiating theory with practice in boat designing without the necessity of actually building complete full-size vessels to exemplify the theories involved. Such a means of forecasting or prospecting in the field of naval architecture is highly desirable in the case of war vessels, for a modern battleship is too costly, and too tedious in construction to permit of doubt or speculation as to its attributes, but oddly enough there is a need, correspondingly almost as great, in the field of motor boating for just such advance information. In the merciless struggle for higher speeds in motor boats, there are but two main paths to the goal—namely advance in engine design and improvement in hull outline.

Without the aid rendered by an experimental model basin the evolution of motor boat design would perforce, proceed much more slowly. Indeed, in the absence of model tests, the designers and builders of motor boats would have to proceed on the basis of "the proof of the pudding."

Testing by models—or motor boat racing by proxy, as it might be denominated—in an experimental basin, does not, of coarse, render a verdict upon motor design, but it affords some valuable hints in the kindred field of propeller design and arrangement. Its especial forte, however, is to pass judgment upon hull design and here it is well nigh infallible. It has been found that models or miniature motor boats carefully built to scale and towed at varying speeds in the experimental basin, will accurately reflect all the conditions as to resistance, wave action, etc., which would be encountered by a full-size motor boat constructed on the same lines. Obviously it is a simple matter to correct defects or make changes in a model as dictated by the tests, whereas it would be well nigh impossible to make such alterations in a completed craft. The experimental model system, then, permits the designer of a motor boat to try out each and all his theories at small expense and with scant loss of time, and to ultimately go ahead with the construction



Testing a model. The "push" is applied through a knife edge about amidships and there is a mechanism at either end of the model to register change of trim at the various speeds at which it is towed.

of a 'cup defender' or 'cup challenger' on the lines that, by tangible comparison, promise the best results.

The sole handicap to motor boat tests at the government plant arises from the fact that the naval establishment was created with a view to testing the models of larger vessels than are usually found in the motor class. For instance, the operating machinery at the governmental basin was designed for handling models averaging, say, 200 pounds in weight, whereas the motor boat models range from 6 to 14 pounds in weight. On the other hand, the towing apparatus has a limit of speed of 17 to 20 knots, whereas a higher speed would prove advantageous in the case of some motor boat tests. However, these discrepancies merely call for certain allowances in making deductions, and do not really affect the accuracy of the findings in the motor boat tests.

For all that the practice of making tests by means of models is growing rapidly in the motor boat world, the principle is by no means new. Indeed, it was as long ago as the year 1870 that the late Mr. William Froude demonstrated through the medium of a small tank at Torquay, England, the value of towing experiments upon small-scale models of ships for the purpose of deducing the resistance of full-sized ships of corresponding design. Subsequently the British admiralty adopted the idea and built a large basin near Portsmouth, and this example was followed by Russia, Italy and other nations. The construction bureau of our own Navy Department early appreciated the value of the new adjunct, but was for a long time unable to secure an appropriation for the purpose. Finally, however, as a result of the interest in naval affairs stimulated by the events preceding the Spanish-American War, Congress appropriated the sum of $100,000 for the construction of an experimental tank, and there was provided at the Navy Yard at Washington, D. C., a basin that compares favorably with any owned by foreign governments, or the few private shipbuilding firms in Europe that have arranged such plants for their own use.

The experimental basin at Washington is sheltered by a brick building about 500 feet in length and 50 feet in width. The water surface of the basin is slightly shorter than the building, being about 470 feet in length, and ranking as the largest tank of the kind in existence. For a distance of one hundred feet at the south end, where the tests or "runs" begin, the basin is shallow, while there is greater depth throughout the remaining 370 feet. The water surface of the tank has a width of 43 feet, and the depth from the top of the coping to the bottom of the basin is 14 feet 8 inches.

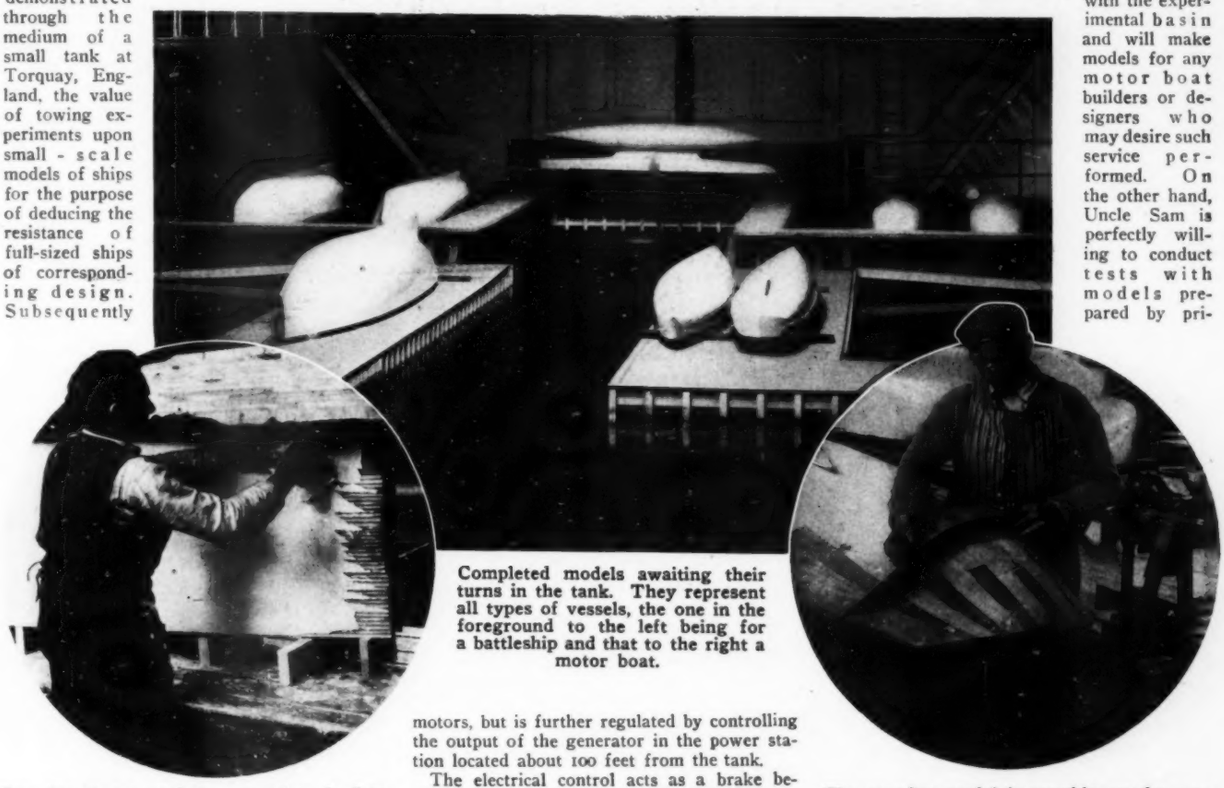
A most interesting feature of the equipment of the basin is, of course, the mechanical apparatus for towing the models in their voyages up and down this odd artificial waterway. The towing mechanism is in the form of a traveling crane or bridge which spans the tank, traveling on rails or runways at either side of the building. From the middle of this suspension bridge on wheels depends the towing bracket to which is attached the model to be tested. The whole apparatus is electrically operated, and the 25-ton bridge or carriage is supplied with power through the medium of four motors—one for each of the four pairs of wheels upon which the bridge runs. However, the speed of the carriage, and consequently of the model which it is towing, is not dependent solely upon various combinations of these four motors, but is further regulated by controlling the output of the generator in the power station located about 100 feet from the tank.

The electrical control acts as a brake because, when the current is shut off, the motors become generators, but this could not be relied upon for high speeds, since the sudden rush of current due to possible unskillful manipulation might throw the circuit breakers, thus opening the circuit and cutting off the current entirely. For these reasons there has been provided at the north or terminal end of the basin a double system of brakes to hold the carriage. The first is a friction brake consisting of two strips of iron on either side, pressed together by hydraulic cylinders. These are forced apart by a slipper on the carriage about ten feet long, which, as well as the brake strips, is kept thoroughly oiled so that the coefficient of friction for stopping, though low, is fairly definite, and sudden jerks are avoided. The pressure in the hydraulic cylinders is controlled by an accumulator and a pump driven by electricity.

In high-speed runs such as those necessitated for motor boat tests the practice is to use the electrical brake to reduce the speed of the carriage before applying the friction brake and finally there is an emergency brake as a last resort, so that if the friction brake for any reason fails to work the carriage will nevertheless be caught. The emergency brake consists merely of a piston about sixteen inches in diameter working in a cylinder which is submerged in the water of the tank and connected by wire cables to a hook which takes hold of the carriage. The head of the cylinder has a round hole and the piston rod is tapered so that as the rod is drawn out by the motion of the carriage the hole is gradually closed, the entire operation being upon almost precisely the same principle as obtains in the hydraulic gun recoil brake.

At our federal testing tank wooden models are employed almost exclusively. Abroad most of the models for such test work are made of paraffine, but several considerations influenced the American authorities in favor of wood, one of them being the fact that the climate of Washington is so warm in the spring and summer that paraffine could not be expected to retain its rigidity satisfactorily. The wooden models are coated with a special varnish which renders the surface, to all intents and purposes, watertight. The government maintains an up-to-date model making plant in conjunction with the experimental basin and will make models for any motor boat builders or designers who may desire such service performed. On the other hand, Uncle Sam is perfectly willing to conduct tests with models prepared by private firms or individuals, and many of the motor boats models are accordingly sent to Washington complete and ready for service.

For both the model and for the tests in the experimental basin, which commonly occupy from one to three days, the government merely charges the motor boat designer or owner (the owner usually pays the bill in the end- the actual costs involved on the basis of material, per diem labor and overhead charges. Variation in the amount of time consumed in the tests, etc., results in a rather wide range in the aggregate cost of different experiments, but generally speaking, it may be placed at $150 to $200 in the case of small motor boats and from $250 to $400 in the case of large motor boats. After a model is completed careful measurements are made of its exact form and shape, and this becomes the basis of the historical record that is amplified as the tests progress and the delicate mechanism on the traveling carriage chronicles all the details of time, distance and resistance.



Completed models awaiting their turns in the tank. They represent all types of vessels, the one in the foreground to the left being for a battleship and that to the right a motor boat.

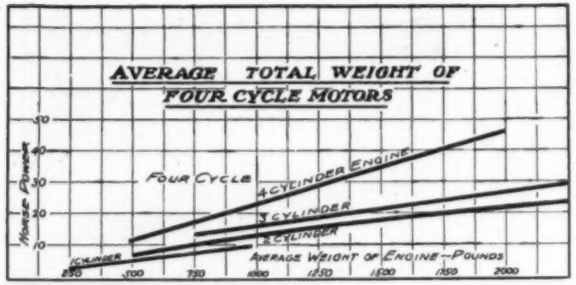
For the larger models a template is first constructed of plaster over thin battens.

The wooden model is roughly cut by machinery from the template model and is then trued up by hand.

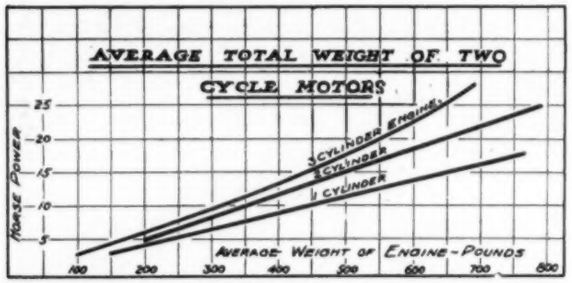
What's What in Marine Motor Design.

An Analysis of the Marine Motor Practice of 1912 and 1913 and a Comparison of the Two.

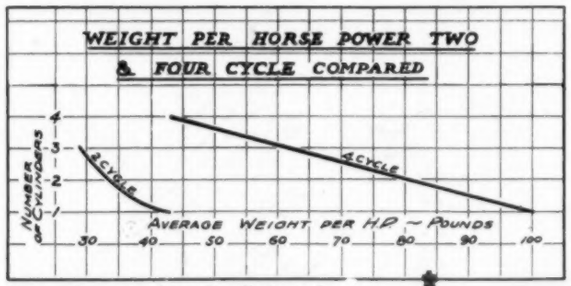
This is the first of several articles on the subject of up-to-date motor design. This month the weights of the various types and the weights per horse power are shown graphically and compared. The percentages of the models of the various numbers of cylinders on the market, both two- and four-cycle, are interestingly shown and compared. Next month the subject of cylinder volume and the relation of bore to stroke will be considered.



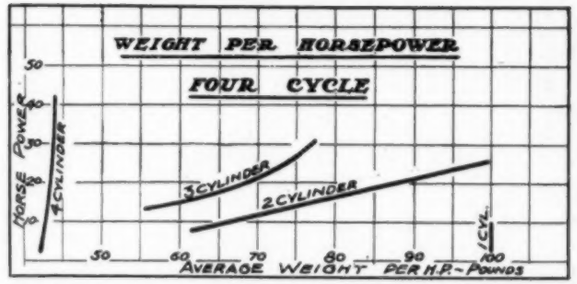
Four-cycle motors under 30 h.p. weigh from 250 up to 2,300 lbs., on the average, depending upon the number of cylinders and the power.



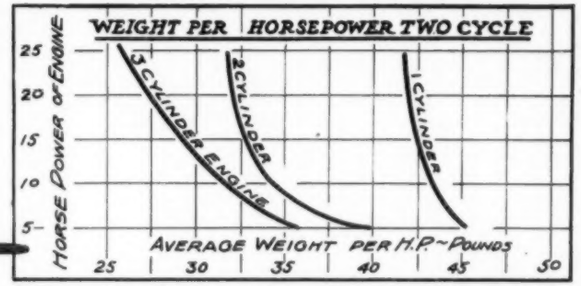
Where weight is an important factor the above curves show how much different powers may be obtained for a given weight.



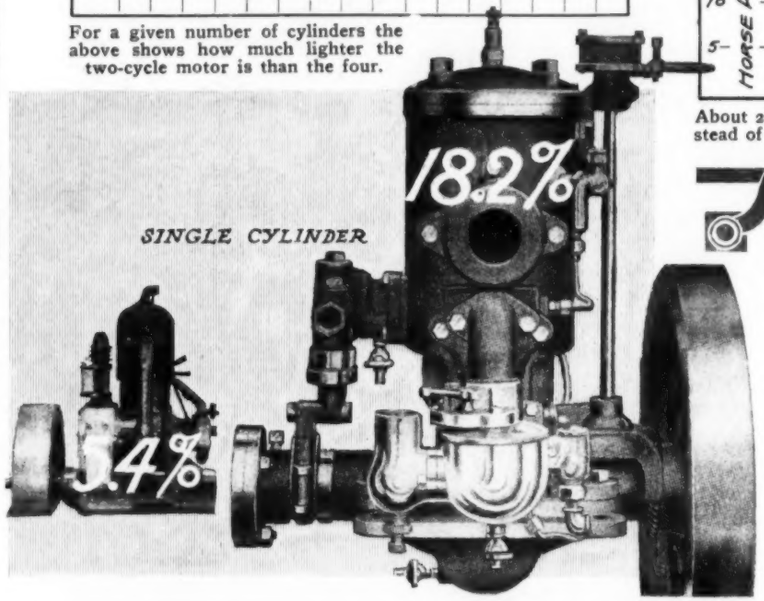
For a given number of cylinders the above shows how much lighter the two-cycle motor is than the four.



In choosing a new engine care should be taken to get one of the correct weight. Considerable variation in this is possible between those of a different number of cylinders, as may be seen.



About 20% in weight is saved by using a 2-cylinder engine instead of a 1-cylinder for a given power and 30% by 3-cylinders.



STUDYING the characteristics of about 1200 representative models of internal combustion motors on the market for 1912 and 1913, we find some interesting and instructive results. In two-cycle practice for 1912, as would be expected, we find the one- and two-cylinder sizes forming 68.4 per cent. of the total two-cycle models on the market, and in 1913 this figure goes up to 71.3 per cent., showing the great influence of the small boat on the motor boat industry. Analyzing further, we note that the small one-cylinder size actually leads all, both in 1912 and 1913. Two-cylinder engines are a very close second; then comes a big drop to the three-cylinder two-cycle engine. The motor with four cylinders shows up for about 10 per cent. importance, and the six-cylinder two-cycle engine also makes a respectable showing.

Prospects for 1913 show an increase in the per-

vary from 100 lbs. for the small motors up to many hundreds and even thousands of pounds for the largest size motors. The reader should not think that considerable variation from the values shown is not possible, for such is not the case. Instances are not rare where the weight of light racing engines is less than one-fifth that shown as an average figure for a smaller size motor, and those of heavy-duty machines decidedly heavier, but as average values the curves represent standard practice very well. In two-cycle motors of one-cylinder the weight per horsepower as seen from the curves is from 43 to 45 lbs., irrespective of the total power of the engine.

Two-cylinder engines save about twenty per cent. of this weight, coming down to around 35 lbs., but ranging from 40 lbs. per horse-

cycle engine also makes a respectable showing.

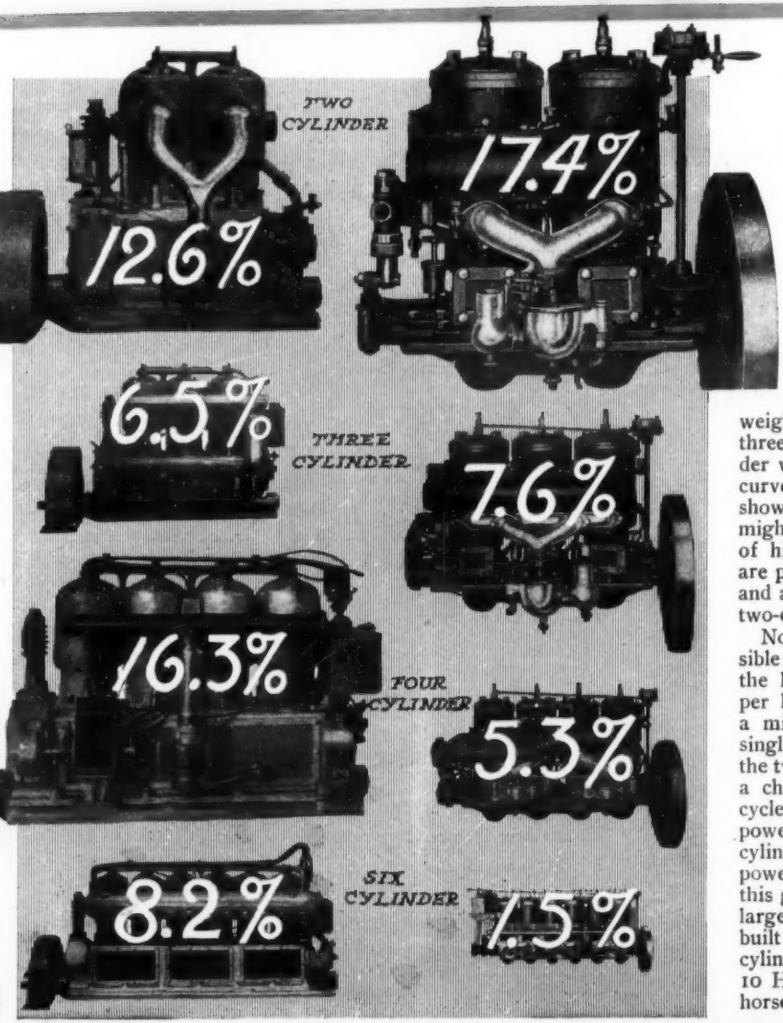
Prospects for 1913 show an increase in the percentage of the two smaller sizes, with of course a corresponding decrease in the larger models. This does not indicate by any means that there will be a less number of three-, four- and six-cylinder models on the market in 1913 than in 1912, but owing to the great increase in the number of smaller models that are appearing, this must necessarily cut down the percentage of the larger sizes.

Of the four-cycle models the number of those having one cylinder show up also remarkably strong. We hardly ever think of a one-cylinder engine of other than the two-stroke type, but looking over the chart shows that they are on the market in goodly numbers and actually increasing both in percentage and numbers for the coming season. In this cycle the four-cylinder engines naturally lead with around 35 per cent. of the total number on the market. Six-cylinder four-cycle types show up strong with no change in percentage from this year to next, while the eight- and twelve-cylinder motors are decidedly on the increase.

Surprising it is that the three-cylinder models only come in for about 15 per cent. of the attention, and they are actually behind the two-cylinder types, which have so many objections to be overcome before they are satisfactory and serviceable. This importance of the two-cylinder four-cycle type speaks well for the industry and shows advancement in the art of design and manufacture.

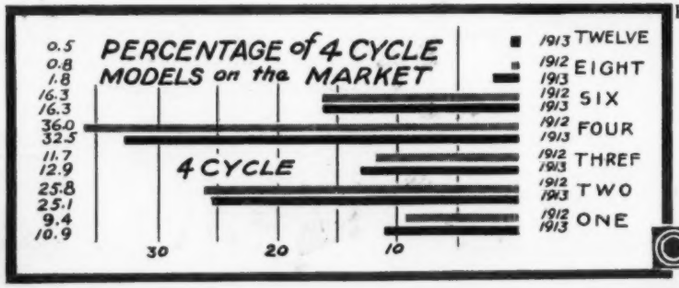
We have another interesting problem in the average weight of marine motors, that must not be lost sight of in choosing one's power plant. From the characteristics of weight and horsepower we find that the multi-cylinder engine gives the greatest rated horsepower per unit weight. The curves on the upper page show this point up very clearly. These curves were also plotted from the average weight and horsepower values of over one thousand models on the market.

In the two-cycle types the average total weights



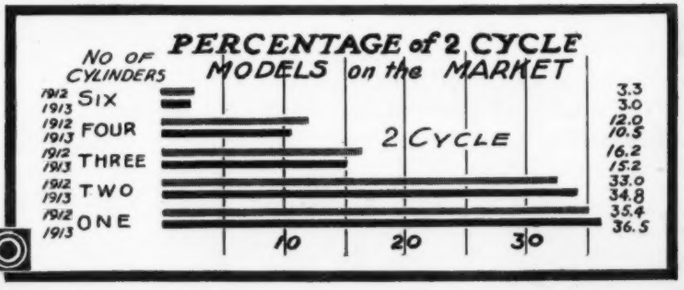
power in a 5-H.P. motor to 33 in a 25-H.P. Three cylinders yield a further gain, the average being not far from 30 lbs. per horsepower, but showing considerably more variation than the one- or two-cylinder engines with a change in the total horsepower. This is only about one-fifth of the engine-room weights per indicated horsepower in a first-class passenger steamer with up-to-date steam machinery and neglecting the boiler-room weights entirely. For a given weight about thirty per cent. more power can be obtained by using a two-cylinder engine instead of a one- and sixty per cent. more power with a three- than a one-cylinder motor. The curves show the average weight per horsepower in engines of one, two and three cylinders, but not enough data for four-cylinder weights was available to make a representative curve. Weights per horsepower of two-cycle motors show a slight falling off in the larger sizes, which might be explained to some extent by the influence of high-speed, light-weight racing engines, which are present in considerable numbers in this practice and also to the absence of high-powered heavy-duty two-cycle motors.

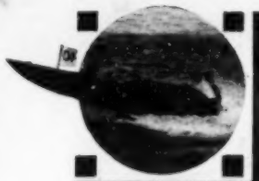
Not quite as good an economy of weights is possible with four-cycle motors as with the two-cycle, the lightest average weight being around 45 lbs. per horsepower for the multi-cylinder engine and a minimum of 100 lbs. per horsepower for the single-cylinder motor, which is considerably above the two-cycle practice. Four-cycle motors also show a characteristic that is exactly opposite the two-cycle data; that is, an increase in weight per horsepower as the power of the engine increases. A two-cylinder engine weighs about 65 lbs. per horsepower in the 10-H.P. size, but in the 20-H.P. motor this goes up to 90 lbs. per horsepower. This is due largely to the slow-speed heavy-duty engines being built chiefly in these higher powers. However, one-cylinder motors which are not built in sizes of over 10 H.P. to any great extent, average 100 lbs. per horsepower.

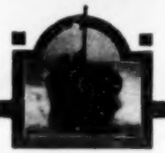


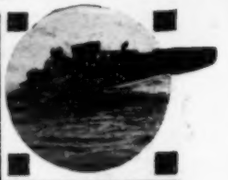
FOUR CYCLE TWO CYCLE

The above represent visually by their relative areas how the engines of the different numbers of cylinders compare. The total number of models on the market, both two and four-cycle, was taken at 100%. It is impossible to show by this method the relative proportion that the eight- and twelve-cylinder engines bear to the total, but this may be seen from the diagrams at the lower corners of this page.









The Championship Races of 1912.

The table below shows at a glance the particulars of all the prominent events of 1912 in both the speed and cruising branches of the sport. Including, as it does, a comparison of each speed event with the corresponding event of 1911, besides the complete specifications of both hull and power plant of each winning boat, it is the most complete table ever published, and will be found an invaluable record of the past season, both historically and in the matter of efficiency of design.—Editor.

The Winning Boats, Their Engines and Specifications.

The Speed Boat Events and Their Winners.

Event	Length of Race, Miles	Name of Boat	Owner	Elapsed Time	Length of Boat, Ft.	Type of Hull	Make of Engine	H. P.	No. of Cyl.	Bore & Stroke	Winner's Speed Stat. M. Per Hr.	Winner's Speed Same Race, 1911 Stat. M. Hour
Mississippi Valley 20'	15	Baby Reliance I	J. S. Blackton	34:16	20	Single step	Sterling	150	8	5½ x 6¾	26.2	27.5
Mississippi Valley 32'	20	Baby Reliance I	J. S. Blackton	35:00	20	Single step	Sterling	150	8	5½ x 6¾	34.3	28.8
Mississippi Valley 26'	20	Baby Reliance I	J. S. Blackton	33:29	20	Single step	Sterling	150	8	5½ x 6¾	35.8	27.0
Mississippi Valley 40'	20	Baby Reliance III	J. S. Blackton	34:27	20	Single step	Van Blerck	220	12	5 x 6	34.8	32.0
W. P. B. A. 26' (Chicago)	14+	Baby Reliance II	J. S. Blackton	§20:46	20	Single step	Sterling	150	8	5½ x 6¾	40.3+	33.4
W. P. B. A. 32' (Chicago)	14+	Chicago II	E. J. Richards	§24:14	32	Five-step	Two Sterlings	200	16	5½ x 6	34.6+	31.7
W. P. B. A. 40' (Chicago)	18+	Baby Reliance II	J. S. Blackton	§26:50	20	Single step	Sterling	150	8	5½ x 6¾	40.3+	35.6
Wrigley Championship	23+	Baby Reliance II	J. S. Blackton	§35:49	20	Single step	Sterling	150	8	5½ x 6¾	38.5+	†
Gold Challenge Cup	32	P. D. Q. II	A. G. Miles	§52:12	20	Single step	Sterling	75	6	5½ x 6	36.8	35.8
Great Lakes Championship	25	Heloise	W. H. Gooderham	59:15	26	Five-step	Wolesley	60	8	3¾ x 5½	25.3	33.0
Red Bank Championship	20	Vita, Jr.	Mrs. J. S. Blackton	48:09	20	Single step	Humber	40	4	4¾ x 5	25.0	
Class A, National Championship	*30	Vita	Mrs. J. S. Blackton	§1:23:23	20	Side planes	Humber	40	4	4¾ x 5	24.8	25.3
Class B, National Championship	*30	Big Balaam	F. Bailey	§1:13:22	40	Displacement	Speedway	125	6	6¾ x 8	28.2	24.5
Class C, National Championship	*30	Peter Pan V	J. Simpson	§53:16	20	Single step	Van Blerck	150	8	5 x 6	38.9	†
British International, first race	*30	Baby Reliance II	J. S. Blackton	48:39	20	Single step	Sterling	150	8	5½ x 6¾	42.6	40.5
British International, second race	*30	Maple Leaf IV	M. Edgar	1:06:25	40	Five-step	Two Austins	760	24	7½ x 7	31.2	38.5
British International, third race	*30	Maple Leaf IV	M. Edgar	47:46	40	Five-step	Two Austins	760	24	7½ x 7	43.3	†
Pacific 20'	20	Swastika		37:05	20	Monoplane	Leighton	125	6	6 x 6	32.3	†
Pacific Free-for-all	30	Oregon Wolf	J. Wolff	46:20	40	Side planes	Smalley	250	9	5½ x 5½	38.9	32.9
Great Lakes 32'	30	Baby Reliance II	J. S. Blackton	39:35	20	Single step	Sterling	150	8	5½ x 5¾	45.5	32.1
Great Lakes Free-for-all	30	Baby Reliance II	J. S. Blackton	43:49	20	Single step	Sterling	150	8	5½ x 6¾	41.0	39.7
Interlake Championship	35	Baby Reliance II	J. S. Blackton	45:25	20	Single step	Sterling	150	8	5½ x 6¾	46.3	33.8
International Handicap	15	Gadfly III	H. B. Greening	40:31	32	Displacement	Niagara	90	6	6¾ x 6½	22.2	34.6
Mississippi Valley Statute Mile Dash	1	Baby Reliance III	J. S. Blackton	1:07	20	Single step	Van Blerck	220	12	5 x 6	53.7	38.7
‡National Carnival Nautical Mile Dash	* 1	Peter Pan V	J. Simpson	§1:36	20	Single step	Van Blerck	150	8	5 x 6	43.0	45.5

* Indicates nautical miles. † Indicates race not run in 1911. ‡Note.—On one run against the tide Baby Reliance II averaged 45 miles per hour. §Best time given in heat races.

Cruiser Handicap Events of Over 100 Miles in Length Including Annual Heat Handicap Races.

	WINNING BOAT, ON CORRECTED TIME								BOAT MAKING FASTEST TIME		
Event	Length of Race	Name of Boat	Owner	Elapsed Time	Waterline Length	Waterline Beam	Make of Engine	No of Cyl.	Bore & Stroke	Name	Owner	Elapsed Time
New York-Albany	*235	Respite	V. C. Pederson	30:41:30	35.20	7.50	Ralaco	4	4 x 6	Thistle	J. H. Wallace	‡27:35:25
New York-Block Island	*100	Thistle	J. H. Wallace	10:45:00	37.00	7.10	Sterling	4	5½ x 6	Thistle	J. H. Wallace	‡10:45:00
Philadelphia to Bermuda	*719	Dream	C. L. Lagen	104:29:05	39.10	8.66	Standard	2	6 x 8	Dream	C. L. Lagen	104:29:05
New York-Cornfield	*183	Alfred S	H. Soldner	27:59:12	23.67	7.67	Metropolitan	1	5 x 5½	Empire	J. L. Luckenbach	20:40:50
Chesapeake Bay	200	Marguerite II	A. B. Cortledge	14:28:00	64.12	13.25	Keystone	8	6 x 7	Marguerite II	A. B. Cortledge	14:28:00
Delaware River	*196	Chelwood	R. K. Lennig	24:15:15	39.75	8.55	Hall	2	5½ x 6¾	Clare III	Dr. Drexler	19:13:56
Pacific Long Distance	150	Full Moon	K. Walkem	23:31:30	56.00		Standard	4	6 x 8	Soya	R. B. Lewis	20:54:00
Motor Yacht Championship	* 22½	Avis	F. C. Havens	§1:46:41	65.18	9.78	Craig	4	9 x 10	Avis	F. C. Havens	§1:46:41
Cabin Launch Championship E	* 22½	Peter Pan, Sr.	J. Simpson	§1:27:57	39.90	6.60	Continental	8	5 x 5	Peter Pan, Sr.	J. Simpson	§1:27:57
Cabin Launch Championship F	* 22½	Alfred S	H. Soldner	§3:12:50	23.67	7.67	Metropolitan	1	5 x 5½	Empire	J. L. Luckenbach	§2:14:24
Open Launch Championship G	* 22½	Valiant II	J. Sauer	§2:55:17	20.75	5.21	Metropolitan	2	3½ x 4	Almel	T. Mellor	§1:47:43
Open Launch Championship J	* 22½	Elise	T. Kick	§2:23:40	27.60	5.60	Atlantic	3	4¼ x 4½	Greyhound	L. G. Lloyd	§2:20:33
Yachtsmen's Ocean	*178	Caliph	M. E. Bingham	20:00:05	57.00	10.60	Kent	4	6 x 8	Marguerite II	A. B. Cortledge	18:18:00
Around Long Island	250	Spindrift	C. R. Butler	32:08:00	40.20	8.70	Ralaco	4	5 x 7	Spindrift	C. R. Butler	32:08:00

* Indicates nautical miles. § Best time made by winner in heat race. ‡ Indicates record for course.

Co Nova Scotia in a 21-Miler

The Ocean Cruise of Old Glory II. an Amateur Built 24 ft. V-Bottom Runabout, from New York to Nova Scotia and back.

By Geo. P. P. Bonnell.

Part II.

There are two ways of cruising successfully in open water, one is with a boat that is designed and built to meet the worst and stay out in it—in other words, an ocean cruiser. The other and newer method is to use a fast boat with reserve power enough to make the long outside runs and get the cover quickly, and still with sufficient seaworthiness of design to enable her to ride out a gale in case of necessity. Mr. Bonnell chooses the latter method and his boat is an ideal one for the purpose. She is fast, exceptionally so, and the fact that she is as seaworthy as any runabout of her size is amply proved by the fact that she stays out day and night and seldom has to run for cover.—Editor.

AFTER leaving Vinal Haven it was necessary to stop once more for gasoline before crossing the Bay of Fundy and we put into Jamesport that night, after a rough day, taking another chance at running a strange harbor in the dark. After digging up Captain Look who keeps the gasoline, he consented to open his warehouse for us, although it was then late at night, and we were thus able to get under way again for Digby at 1 A. M.

Going out by Englishman Channel we headed outside of Libbey Island Light. The ocean was calm, but the night was cold, damp and uncomfortable and we were glad indeed to see the sun rise. Its rays lighted up the wonderful cliffs of Grand Manan Island which we were passing by the North Channel, and at 9 A. M. we rounded the island, passed Swallow Tail Light and laid a direct course for Digby Gut, 60 miles across the Bay of Fundy, allowing 2 knots for the tide.

It took a long while for Grand Manan Island to fade away astern being very high, and I suppose we could see it 25 miles away, and for the next hour or two we could not see land at all. Finally, in the distance, looking somewhat like smoke, I made out Nova Scotia, probably 25 miles away, and it seemed an awfully long while before we could see land clearly. I was very anxious to see how close we were going to make our landfall for Digby Gut, and we were all straining our eyes for something that we could identify. Finally I was sure that I recognized the rocky cliffs and a few houses above on the hill, and before long we were positive that we had struck the right spot. We passed through the Gut in quick order, with the tide, waving to some of our old friends as we went along, as they were expecting us and we were a day overdue on our expected arrival.

We arrived off the slip in Digby about 3 o'clock, just two hours over a week from the time of starting, and were greeted by lots of my old friends. They all looked at the boat with a great deal of curiosity and also at the engine, and so we stripped the boat of all the dunnage and weights, and then "let her out." It was the fastest boat ever seen there, and it amazed everybody. Seeing her come in from New York at about a 12-mile clip, now to see her lift her bow a foot and hit it up to over twenty-one was a novelty.

Saying good-bye to our friends, after a pleasant week in Digby we started at moderate speed for Digby Gut, the outlet into the Bay of Fundy. We found conditions outside about as we had expected, and in running through a tide-rip three waves in succession lopped clean over our forward deck and took about a barrel of water into the cockpit. In the noise made by the rush of water and with a lap full, for it struck us right in the chest and face as it came over the engine compartment, completely soaking us, we listened to hear if the engine still ran and were relieved to find the gentle purr going on without variation. I feared that we might have taken in enough to reach the bottom of the flywheel, which would whirl water around in there like a waterspout and put any engine made out of business. The Bay of Fundy didn't look good and fearing the "August storm," we turned back into Bay View, a few hundred yards away, to dry out and await developments. Accordingly, we anchored in Bay View, near the government life-boat Daring. Here we took some of our cooking utensils ashore and had a great lunch, spending the afternoon on the beach. My old sailor friend, "Sandy" Adams, known to hundreds of American tourists for his genial good nature and likeness to Mark Twain, came along about six and invited us to stay with him, just up the hill, until we should decide to make the run across the Bay of Fundy. He agreed with us that the weather did not look good for a favorable passage, and he was right. It blew hard, thundered and rained with the force of a cloudburst at times, until Sunday afternoon, when the rain stopped, but the gale still continued. We all walked down to Point Prim, on the cliffs overlooking the Bay of Fundy, and felt mighty glad we had stayed in harbor, for it was blowing 40 to 50 miles an hour, and a tremendous sea running, the bay being almost white with the crests of the combers. While I believe it possible, with a drogue and oil, to ride out almost any sea that may come up, still I like to avoid the hardship, if possible; and we were well satisfied to await the ending of the storm.

None of us believed Sunday night that it would blow itself out by morning. But at 6 A. M. it was dead calm on the bay, with the exception of a heavy swell, and everything looked like a fine day for crossing. So we hustled up, and by 9:30 were all aboard and ready to start.

Waving good-bye to the folks ashore, we went out through Digby Gut once more, and when we reached Point Prim, took our departure by compass for the northern end of the Island of Grand Manan, 60 miles across the bay. When we were about two miles off, the lighthouse gave us three rousing blasts of the old fog signal, and I imagine they kept their glasses on us until we had faded to a speck, possibly 20 miles off. In about an hour and a half, we were out of sight of land once more, and everything going well. Old Glory proved a fine boat to steer, and we had a sensible 6-inch Ritchie Compass, not one the size of a watch dial. This, to my mind, accounts for the accuracy of our landfalls, although, of course, it is necessary that courses be correctly taken off the chart and allowance made, if necessary, for the tidal drift.

It must have been about 2 o'clock when we rounded the northerly end of Grand Manan, and off here we passed through a school of about 20 young whales, much to everyone's interest.

A breeze made the run down Grand Manan Channel a little rough at times, on account of the tide setting against the wind, but this gradually died down and left nothing but a heavy ocean swell. As we neared Jonesport, we passed several islands that were literally cov-

Old Glory II and her life boat tender on their way to Mr. Bonnell's backyard for the winter.

ered with gulls and wild ducks, these islands being their breeding places. We arrived in Jonesport at 7 o'clock, being just 10 hours from Digby, and having maintained a speed of 12 miles per hour for 120 miles.

We went into Jonesport with the idea of getting more gas, a good feed, and then starting out about 10 o'clock for an all-night run. But fog came up and we decided not to attempt getting out of an unfamiliar harbor in it. So we had a good night's rest at the hotel.

The V-sections of Old Glory's underbody ar e sharp and concave forward and are carried well to the stern, as liberal deadrise is desira ble for ocean work.

The fog did not clear off sufficiently to make it wise to leave until 2 o'clock in the afternoon. We ran down Moosabec Reach at moderate speed, and were soon out in the ocean once more, where we found a long roll from the southwest, caused by the previous storm. Around 3 o'clock the wind came up out of the northwest, and the result of this wind against the southwest swell soon had a nasty sea going. We passed inside of Petit Manan Island, going through the rips there in good style. From there we headed for the outside of Schoodic Island, intending to run all night down the coast. But as the sun lowered the wind came up very strong and the cross-sea made running unpleasant.

When the wind comes up as the sun goes down it usually blows hard all night, so we decided to run to Bar Harbor, but before getting to Schoodic Island I saw that we could not make it before late, and would probably get it even rougher in Frenchman's Bay, so we turned at right-angles and ran into Prospect Harbor, about six miles in. On this run we felt the full force of the wind and spray, which blew off the crests and made it necessary, in order to keep dry to handle the boat carefully, taking advantage of the smooths to open the throttle, and when an extra good crest was coming along to slow down. Here the flexibility and auto control came in handy.

I might say right here that an auto wheel (of good size) and a Wicker-kraft chair made the most comfortable steering arrangement I have known. When you steer all day or all night you will realize the comfort of this arrangement. And the V-bottom is so free from the violent rolls of round-bottoms that none of us ever "capsized" in our chairs.

We arrived in Prospect Harbor just before dark, anchored in a well-protected spot, and went ashore in the tender. The general store referred us to Mr. John Perry's, where, he told us, we might be able to obtain rooms and supper.

Thursday morning looked fine and we got under way again about 9 o'clock. This was a fine morning's run, the weather being slightly cloudy and the sea nothing but a long roll. We crossed Frenchman's Bay, ran inside of Baker Island, inside of Great Duck Island, outside of Swan's Island, and outside of Isle au Haut, all these islands being far off the mainland. After passing Isle au Haut and Saddleback Ledge, we decided to make a compass course for Owl's Head Light, the entrance to Rockland Harbor. The northwest wind sprang up again pretty hard, and we had a rough chop crossing Penobscot Bay. We ran close into the lighthouse, past the channel black buoy, and as a result of disobeying government marks, slightly bent the tip of one of our blades on a rock which had probably 25 feet of water around it. Had we not been going at our lowest speed, the damage might have been great. After wandering around ashore for a while, we ran down to Owl's Head Inn, about a mile below, and had a fine fish supper.

After supper George and I went down to the wharf, and just as we got there a lone man in a 25 foot fishing boat, with auxiliary engine, came in towing behind a launch. He was "all in" so far as nerve went. We helped him make fast to the wharf; he did not care whether she was tied there or not, so long as he was "on God's earth once more." "Never again" for him. His tale was about as follows: He was a teamster in Boston, was up spending his vacation with his brother, a lobsterman, and had borrowed his brother's boat to go out and set a trawl. He apparently knew nothing about an engine, but had managed to get out. He had neither food, water, nor oars aboard, and only 100 feet of anchor-line. When the northwest breeze came up, he started to "drift to Europe;" engine wouldn't work; tried the sail, but this only made him drift faster; anchor would not even touch bottom now. Going to sea without food or water, he had just hove-to a big barkentine, when the men who towed him in came along. When we showed him our small boat and told him we had been from New York to Nova Scotia, and were on our way back, with two women aboard, he must have thought we were crazy.

To me, the most important part of such a cruise, is the preparation for emergencies which may or may not arise. Suppose our engine had absolutely broken down and we had been blown completely off the coast in a gale, while riding to a sea anchor. I have every faith that the boat would live out almost anything while hove to in this manner. The worst that could happen would be the physical hardship. We had food and water sufficient for a month, if necessary. Had the boat suddenly caught afire, the 14½ ft. tender (large enough to be a life-saver—not a death trap), was stocked for ten days with food, water, line, and oars. There would be no time to get these things aboard, and the suffering from the lack of them might be intense. Many of these points, while they may never come into use, may at times be life savers. After carrying a sea-anchor, or drogue, five years, on three Nova Scotia trips, I have used it but once. But when you need it, you need it badly.

We left Owl's Head Inn at six, Friday morning, proceeding slowly down Mussel Ridge Channel as far as Whitehead. When we reached this point, we found it blowing as hard as ever, and decided to spend the day on the Island of Whitehead, inspecting the Life Saving Station and the Lighthouse and picking blackberries and raspberries, etc. I also spent an hour or two helping one of the lifeboat crew at his "knitting" as he termed the building of a new launch, during his spare time. We left the life saving station at 10 o'clock Friday night, shaping our course to pass just inside of Monhegan Island, about 18 miles away. The wind was still from the northwest, moderate when we started, but by midnight was blowing a fresh breeze, and the sea was rough.

I was steering on this stretch, and around one o'clock got so tired and cold and my eyes burned so from the salt spray, that I decided to work in under the lee of Pemaquid point and anchor until daylight. It was a cold run, and three times I put out 200 feet of line until the water shoaled enough to get good holding bottom. I proceeded very cautiously when nearing the dark outline of shore at night, knowing how studded the coast is with small rocks and islands, with deep water close alongside.

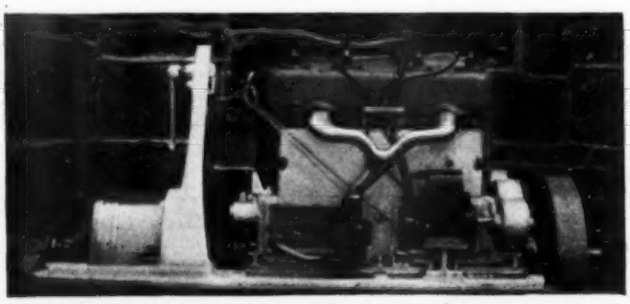
When I finally anchored in about 50 feet of water, the warm engine compartment looked better to me than the cockpit and accordingly, I lay down in my oilskins and slept until 6 o'clock beside the engine, with the hood down, the large ventilator furnishing engine compartment with plenty of air. Needless to say, the engine was pretty cool by morning, and so was I. I was awakened by a hail from a lobsterman, asking if we were in trouble. Lifting the hatch, I thanked him for his interest, saying we had just run in under the lee of the Cape for a "nap."

We got under way at 7 o'clock Saturday morning, cooked a bite to eat, and had a fine run down the coast, passing Portland Lightship on our port hand. In the afternoon the breeze again came up from the southwest, making a fair head sea and compelling us to reduce speed somewhat.

We got into Portsmouth just at dark, 7:30, tying up to the same dock where we had stopped on our way up. The tides here are very strong, one channel being named, "Pull and be Damned," but all we had to do was to open our throttle a little more to maintain our average speed.

We did not leave Portsmouth until 10 o'clock Sunday morning. We made a straight course for a point about two miles off Cape Anne, but by the time we had put Cape Anne on our beam, it was raining and blowing hard, and very rough, and numbers of fishermen were running into harbor. So we decided that it would be foolish to attempt the long run over to and around Cape Cod, and saved ourselves a lot of rough weather, for that was the beginning of the Labor Day storm.

(*Continued on page 39.*)



The flexibility of the 30 h.p. Loew Victor was a great advantage in the long ocean runs, as it permitted adapting the speed to weather conditions and taking advantage of any opportunity to "let her out."

The PRIZE CONTEST in QUESTIONS & ANSWERS

A Steam Box for Amateur Builders.

Several Different Arrangements for Softening the Wood, with Valuable Hints for Bending the Frames to the Best Advantage.

THE PRIZE CONTEST—Answers to the First Question in the November Issue.

Boiling Water and Wet Steam.

(*Prize Won—Supplies from Durkee.*)

FROM experience one finds that very wet steam or boiling water is best to soften frames of oak or elm and such planking or other portions of a boat's hull that requires bending.

The dimensions of the craft one contemplates building of necessity must enter into a determination of the proper size to make the steam box. For the building of any boat up to thirty feet long an arrangement of the size and type shown in the sketches will gladly soften and make pliable any wood one wishes to wrap about the bilge or twist around the stem of a boat.

At the nearest tinsmith's, or if one has that bent shape a 16-gauge galvanized iron tank 6 inches deep by 8 inches wide by 8 to 9 feet long with a crimped and soldered seam along the top: the lower end of course must be watertight which is accomplished by fitting and soldering in a head; the upper end is cut diagonally and the rough edges of the metal beaded. A wooden cover is made of ⅞-inch material cleated so as to form a rabbit which holds it in position.

A fireplace built of bricks or of stone with the aid of the legs as shown in sketch will hold the tinbox in place, the square end, of course, resting on the ground. Several buckets of water and a brisk fire will supply all the heat and steam needed for a small job.

A three or four-inch-diameter pipe plugged at one end, supplied with water and laid diagonally across an open fire or with the closed end into a stove answers very well for light work. Similar outfits are used in numerous small boat shops. Do not plug the upper end of the pipe for obvious reasons.

A gasoline furnace such as plumbers use may be employed for heating the water and thus the steaming box may be entirely indoors.

In framing, very sharp turns are accomplished by ripping the ribs, and after they are cold and set, riveting the two parts together. A flat iron band about 1/16 of an inch thick, the width of the frame and the same length (see Fig. 2) clamped at each end while the frame is straight and on the outside of the turn will prevent the wood from splitting; when cooled the band may be taken away.

There are three methods of bending frames. In some shops the forms are made to the size of the inside of the planking or outside of the frames; in this case the frames are bent inside of the heavy battens which run for' and aft'. One can almost tell without going into the shop when this method is used, by the great number of broken frames the woodpile contains.

Other shops have a dozen or more standard frames over which all the frames are bent; the forms are made to outside of planking and light battens run for' and aft'. The boat builder then fits the most likely-looking frame to the place it fits best and after they are all in place they are faired up and the bevels cut for planking. Most all heavy work is done by this method.

Still other shops bend frames outside of heavy for' and aft' battens. The forms are made as much smaller than the outside of the planking as the thickness of the plank, the rib and the batten. For instance, the plank is ⅜", the rib 1¼" and the batten 1¼". The sum being 3⅜" which is the amount smaller the form is than the dimensions to the outside of planking.

WILLIAM ATKIN, Huntington, L. I., N. Y.

* * *

Questions for the March Contest.

Illustrate and explain the construction of a club float that can be made by the members.

Suggested by W. B. Moores, Newburgh, N. Y.

Give instructions and drawings for boring a shaft log of a motor boat.

Suggested by H. D. Dickinson, Dunkirk, N. Y.

Discuss storage batteries for use on a motor boat, considering the proper care the batteries should receive during charging, discharging and at rest.

Suggested by E. R. R., Chicago, Ill.

Rules for the Contest.

Answers to these questions, addressed to the Editor of MoToR BoatinG, 381 Fourth Ave., New York, must be: (*a*) In our hands on or before January 25, (*b*) about 500 words long, (*c*) written on one side of the paper only, (*d*) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.) Questions for the next contest should reach us on or before the 25th of January.

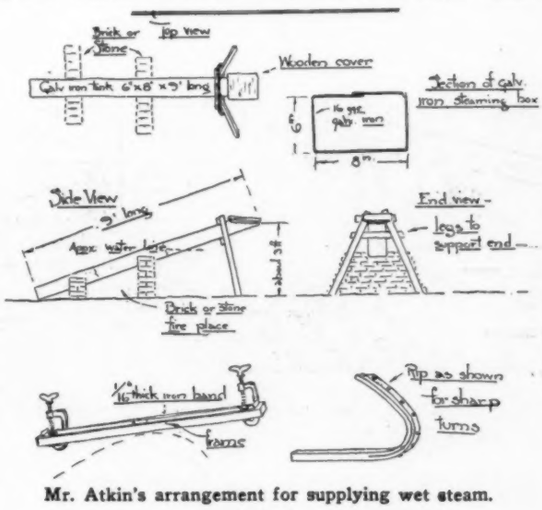
The prizes are: For each of the best *answers* to the questions above, *any article* advertised in MoToR BoatinG, of which the advertised price does not exceed $25, or a credit of $25 on *any article advertised* in MoToR BoatinG, which sells for more than that amount.

(*There are three prizes, one for each question, and a contestant need send in an answer to but one if he does not care to answer all.*)

For each of the questions selected for use in the next contest, *any article* advertised in MoToR BoatinG, of which the advertised price does not exceed $5, or a credit of $5 on *any article* advertised in MoToR BoatinG, which sells for more than that amount.

For non-prize-winning answers published we will pay space rates.

When you send in your answers, state what you will take if you win a prize.



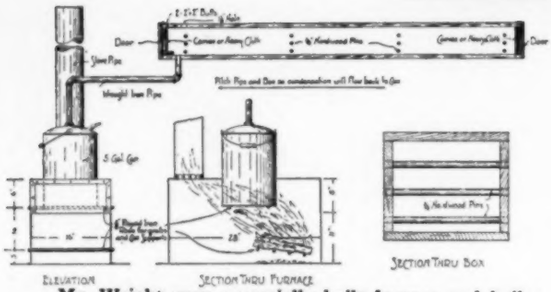
Mr. Atkin's arrangement for supplying wet steam.

A Wash Boiler Generator.

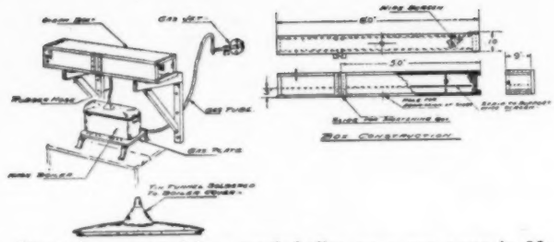
PERHAPS the most difficult problem that confronts the amateur boat builder is how to obtain the desired shape or bend of each frame piece, and yet this difficulty can be readily overcome with the aid of a steaming apparatus. The following description and accompanying sketches give all the general information for the construction of an inexpensive and proven steam box.

The box itself is built up of four boards about 9" wide, 8' long and 1" thick. The back end is closed tight. Construct box according to sketch: first laying bottom board; to this nail the piece at the back or closed end; next fit the two side boards. Now before fastening top or cover in place, nail a narrow strip along the inside of each side board about 3" up from bottom board and parallel to it. Measure back about 5' from front end and saw a slot about 1" wide the entire width of one side board. Make a slide to fit this slot and locate it between two cleats nailed to the other side board. The slide is to be used for shortening up the box when steaming smaller pieces. The outer face of the side board is also fitted with cleats and slide to close the slot when the full length of box is utilized. To the strips on the inside fasten a piece of wire screen (the kind with the small square mesh). This is to be used as a shelf upon which to lay the frames while steaming. This method allows steam to reach all sides of frames. Cut the screen to allow slide to slip back and forth when used for shortening. Next nail top board in position. For a front slide all that is needed is to cut a groove in the upper face of bottom board and under face of top board nail a strip along outer edge of each groove as a guide for the slide. Fit board so as to slide in the grooves and the box is complete with the exception of boring the hole for the admission of the steam.

The steam is generated in an old wash boiler, the cover of the boiler being somewhat altered. A medium-sized tin funnel can be purchased in most any five and ten-cent store (see that you choose one with a good-sized neck. Cut a circular hole in center of boiler cover slightly smaller than outer diameter of funnel and solder funnel to the cover over the hole. C. E. BRADLEY, Fall River, Mass.



Mr. Wright uses a specially built furnace and boiler.



Steam is generated in a wash boiler on a gas stove in Mr. Bradley's outfit.

A Practical Outfit.

REALIZING that a steaming box for amateur's use must be simple, cheap and, if possible, more efficient than those used by professional builders—as the amateur generally works out of doors where his work cools and dries quicker. The accompanying drawing shows a box made of ⅞" material and wide enough to receive the widest piece to be steamed, generally the coaming and about 10" to 12" high, the length also depends on the longest piece to be steamed. Three-fourths of an inch hardwood pins are put crosswise in the box to hold the lumber off the bottom and apart so as to steam equally on all sides. The inner side of the doors are covered with canvas or heavy cloth, to make them tight. By having a door at each end the pieces that get pushed back out of reach may be got at through the other end. Between the door at the low end of the box and the pipe from the boiler is snugly fit a ⅞" x ⅞" strip to stop the condensation from leaking out under the door. A 1½" hole is bored in the top of the box, over which is placed a weight. This acts as a safety valve. This weight should not exceed one pound, which will be the pressure per square inch on the system.

If this hole is made smaller, the weight must be decreased proportionally. The boiler is no more than an ordinary 5-gal. can with a cork fitted in the top and the cork bored out to receive the steam pipe. The furnace is made from 3 sheets of black iron 56" x 30", 16" x 19" and 8" x 16" of about 27-gauge. Before bending the larger sheet, cut a hole large enough to receive the boiler, another one about 2" smaller than the stovepipe to be used. Clip outwards from this hole about 1" in 12 or 15 places and bend the pieces up to hold the pipe in place, as shown on the drawing. After the sheet is bent and riveted up, punch holes for the grates and can supports. Any available ⅜" or ½" rods will do for these. Now put the stovepipe and can in place, fit up the steampipe and fasten the box on the side of a building or fence, being careful to give the box and steampipe a little fall, so as to drain all water back to the boiler. Should you wish to use the furnace in your shop, rivet an 18" x 30" sheet on the bottom and set the furnace up on some bricks.

Fill the boiler through your fire and steam up. After the box gets warmed up, it will stop leaking if it has been closely fitted and well nailed. Here is a word about nailing, should any of the nails come through on the inside of the box they are liable to discolor the wood being steamed. After all is warmed up, place the lumber in the box and keep a slow, steady fire from 20 minutes to one hour, depending on the size and amount to be steamed.

The can, stovepipe and lumber for the box are generally on hand and the steampipe may be used later when piping up the engine, making the furnace the only cost.

M. A. WRIGHT, S. St. Paul, Minn.

* * *

Hot Water Coil Heater to Supply Steam.

WITHOUT a plentiful and continuous supply of hot steam any steam box outfit for boat building work will be a failure. The box construction is simple enough, but the matter of steam supply is a serious problem. The method of using a wood or coal fire in a brick stove with the kettle or wash boiler for steam is very unsatisfactory, as it must continually be given attention and takes a very long time to get up steam, and even when steam is raised it is likely not to be hot enough except for very light bending. We solved this problem by the use of an old second hand hot water coil heater. These can be obtained almost anywhere. They are heated by gas and contain a copper or cast iron coil, through which the water flows and is heated. The cast iron coil type is probably best, as it is not so likely to burn out.

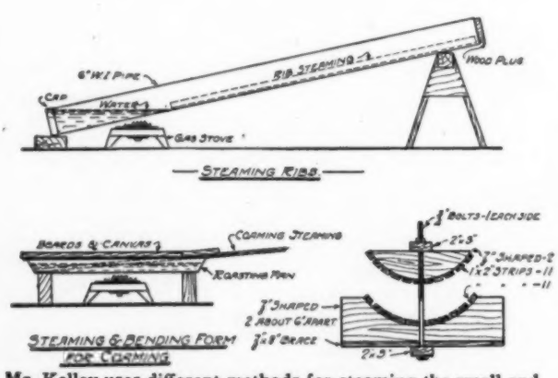
To generate steam from a heater of this kind, it is necessary to run only a very small amount of water through something on the principle of the flash boiler. To do this place a small needle valve or even a ⅛ in. globe valve at the water pipe connection of the heater, using reducers if necessary, as in sketch. The heater can be set up at any convenient point; it should be as near the work as possible to prevent the hot timbers cooling when removed. Rubber hose can be used for the water supply and gas tubing for the gas. Put a gas valve at the gas connection on the heater. Rubber hose can be used for steam pipe and is very satisfactory. If iron is used wrap it in asbestos, burlap or some such covering to keep in the heat, where the steam line enters the steam box it should be reduced to about ⅜-in. iron-pipe size or perhaps ¼ in. This helps to keep up the pressure in the heater. By turning on the needle valve a very slight amount, great quantities of hot steam will be produced as long as the gas is burning. Several steam boxes should be made, one small square one, long enough to take the ribs or frames and just large enough to hold four to six frames. Another should be made flat in section. Take the planks; if only the ends of planks need to be steamed make the box long enough to hold the ends and stuff the opening in end of box with cloths or waste. Another very wide flat box might be made to steam the wide coaming or extra wide planks. These boxes can be easily made of any rough lumber; cotton or oakum should be laid on the joints and the joints painted before nailing together, to make steam tight. Cleats at least two inches high should be nailed on the bottom of the inside of the box, to allow a circulation of steam all around the timbers, which will rest on the cleats. A cover should be made for the end of the box; it does not have to be absolutely tight, and several small holes can be drilled in the top or end to allow some steam to escape.

Do not steam timbers too long, or they will have all the life taken out and will break in bending. Boat builders allow 20 minutes to half an hour per inch of thickness. That is, a one-inch frame or plank would be ready to bend in half an hour's steaming, but much depends on the lumber itself. Kiln dried lumber is very difficult to bend at all. The timbers must be bent at once on removing from the box; a few seconds delay will allow them to get too cold to bend. Some kind of trap or form should always be used to bend over; a timber can be much more easily and accurately bent over a smooth curve than over a series of cleats. In bending square frames, an iron strap can be clamped along the outer edge and will do much to prevent splitting.

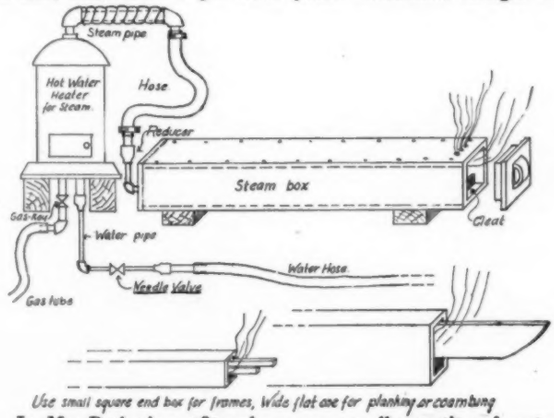
H. H. PARKER, Oakland, Cal.

Steaming Done in a Roasting Pan.

FOR steaming a number of ribs for use in a frame the method here illustrated was used. A piece of second-hand 6" W. I. pipe was tilted up, partly filled with water and a gas stove placed underneath brought the



Mr. Kelley uses different methods for steaming the small and large pieces.



In Mr. Parker's outfit only a very small quantity of water is required.

water to boiling. Six ribs were placed in it at a time and a wooden plug at the upper end kept most of the steam in, for the plug fit loose enough to be easily removed, and hence was not steam tight. They were allowed to steam 30 minutes and then they were bent directly in place on the ribbands and fastened.

For steaming 2 pieces of 8" x ½" oak coaming in order to make a 90° bend of about 7" rad. at the forward end of each, the method shown was used. A roasting pan—the largest she had, was borrowed from the cook and blocked up to allow the gas stove to be placed underneath. It was about half-filled with water and the end of the coaming to be bent was placed in it and covered over with boards and old canvas, to keep as much of the steam in as possible. After steaming 30 minutes it was placed in the bending form and the nuts slowly tightened until they were down as far as they would go. The coaming was then bent to a trifle more than a right angle, but after allowing it to dry for a day and then removing the form, it sprung back a little.

The bottom strake required a little bending, but by laying it on the floor and covering it with an old piece of carpet and pouring hot water on it, it was sufficiently pliable to be clamped in place after about 20 minutes. Having only one boat to make, and not so very much steaming to do for that, a real steam box large enough to take the longest pieces would have been more costly and troublesome to build than necessary. Of course if you are going into the boat building business, a good steam box is necessary, but the various steaming methods described above were all that was required in the building of a 23-footer.

L. R. KELLEY, Philadelphia, Pa.

Gearing Motor to Propeller Shaft.

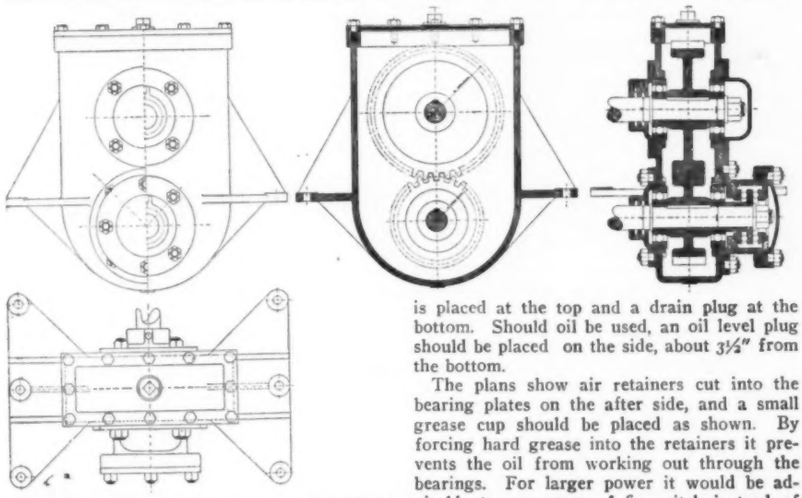
Arrangements Whereby an Increase in the R. P. M. of the Propeller over that of the Engine May be Easily Obtained.

THE PRIZE CONTEST—Answers to the Second Question in the November Issue.

Practical Gears of 1½ to 1 Ratio.

(Prize Won—Credit with Herbert & Huesgen.)

THE sketch shows a transmission gear that was used on the two Delaware River speed boats. "Alparnel, Jr." and "Delphia II," which has proved very successful. The transmission gear that drives the propeller shaft is a thing concerning, which it is almost impossible to give definite detailed dimensions unless the motor is known and its power, in order to estimate the stresses which a gear must withstand. The gear should be made by an experienced machinist of the highest class, one accustomed to high-grade automobile construction will know about what is required.



Mr. John's gear that has proved practical.

As this transmission is similar in general principle and in the degree of skill required in its manufacture to that used on high grade cars, the case should be of aluminum about ¼" thick for 60 h.p. and about 5/16" thick for 100 h.p. The lugs should be cast on the sides to carry the gear on a foundation built to receive it. This foundation although it need not be extremely long should be very substantial, as all the thrusts of the propeller comes upon it and besides that it is under considerate twist due to the propeller and motor torque.

The case should have both the front and back all in one casing as a much more accurate machine job can be obtained than one of the faces made as a cover plate and bolted up against the rest of the casting. If made as suggested, a cover plate at the top serves to introduce the gears, through which the shafts are slit afterwards. The drawing shows clearly the type of transmission advised. It is, of course, of the ball bearing type, Hess-Bright bearings used throughout.

A propeller shaft is fitted to the ball thrust bearing for both the reverse and ahead motion. In the gear shown, the upper gear on the motor shaft has 36 teeth, of six pitch. The lower gear has 24 teeth of six pitch. This makes the gearing one and a half to one. The gears have 1½" face and the shafts are .9842" in diameter. The gears are held on the shafts by parallel feathering keys. The casing is of aluminum, ¼" thick. It should be noted that a filling cup for oil or grease is placed at the top and a drain plug at the bottom. Should oil be used, an oil level plug should be placed on the side, about 3½" from the bottom.

The plans show air retainers cut into the bearing plates on the after side, and a small grease cup should be placed as shown. By forcing hard grease into the retainers it prevents the oil from working out through the bearings. For larger power it would be advisable to use gears of five pitch instead of six pitch.

The gear material, the shafts, and, in fact, every part of this transmission must be of the very highest quality. Special alloy steel, such as vanadium, should be used for the gear blanks, and after being accurately cut, they should be hardened. The shafts should also be treated in the same way.

In designing the case for the gears it is necessary to leave ample clearance all around the gears, in order to prevent the transmission from acting as a gear pump. A universal joint is used between the motor and the gear. This should be of ample size and is quite safe in this position, as it takes no thrust and should run at a comparatively small angle. Of course, it could be eliminated, provided beveled gears at the proper angle were used in the transmission instead of spur gears, but bevel gears are much more expensive and more difficult to fit properly, and are apt to run noiselessly. Then, in addition, a universal joint provides for a certain amount of flexibility between the motor and the transmission which is very useful in hydroplane construction for owing to the continuous pounding a hydroplane is subjected too, the hull is bound to change its shape.

W. E. J., Philadelphia, Pa.

The Morse Chain.

THE application of the Morse chain to gearing a motor to a propeller shaft is one that may be well considered when a higher rate of speed than is otherwise obtainable is desired. The method is illustrated herewith.

In Fig. 1 a profile view of the transmission is shown. Fig. 2 gives the same enlarged. The engine shaft is terminated in a bearing (No. 1), while at the nearest convenient distance in front of this one gear wheel, C, is keyed on. Below this another gear wheel, D, is aligned as nearly as possible, and is similarly fastened to the propeller shaft in back of bearing No. 2. A ball thrust bearing should be attached between bearing No. 1 and the lower gear wheel, D.

A collar may be added as well, at the end of the shaft log, to lessen the strain of the thrust from the propeller.

No. 3 shows the clutch, between which and the engine shaft wheel (C) as little distance as can be arranged should be allowed. The distance between the two wheels C and D, section A-A, is dependent entirely on the boat in which they are used; one or two inches is an average distance.

The Morse chain has the advantages over the simple mesh system of less wear, less noise, and greater life. The details of the belt to be used are three in number: its width, the number of teeth, and the size of the latter. For an 8-10-h.p. engine the belt would be perhaps 2" wide with a width correspondingly less for heavier teeth; the number of teeth will, of course, depend on (*a*) the power to be transmitted; (*b*) the desired speed of the propeller shaft. This method is best suited to heavy duty engines of 400-700 r.p.m. The shaft could then be turned up to a speed of 800-1200 revolutions.

In actual practice I have found that the chain needs but little care, so that the oiling system shown in 2 may be used if desired. Through the flooring a hole is bored directly above the wheel C, and a few drops of oil put through here, supplemented by heavy grease, will care for the belt nicely. The grease is best put on through a small detachable hatch, which may be cut in the floor boards. A tin splash-board may be added to protect the engine and clutch. Bearings Nos. 1 and 2 are oiled by a double-piped oilcup terminating in the dash, whose pipes attach at points shown by arrows X and Y.

Although it is difficult to align the two shafts so that they are exactly parallel, this may be cared for by allowing a little backlash or play in the choice of the wheels and belt. The ball-thrust bearing, as well as the collar, belt and wheels C and D are procurable in all standard sizes.

G. G. TERRIBERRY, Ithaca, N. Y.

Spur Gears in a Cylindrical Case.

AFTER determining how much faster the propeller wheel should revolve, the natural problem is to obtain this increase with the least loss of power.

The most practical method is by a pair of spur gears. These must be of good material, accurately made and properly mounted on anti-friction ball bearings. They should be mounted in a tight and rigid case, which can be filled with grease. This gear set should be attached direct to the engine, if possible, or the drive to it from the engine should be through a flexible joint.

The case shown in the drawing is cylindrical in form to simplify the pattern and machine work. Arms for supporting are cast integral with the case.

The dimensions of the gears depend both on the amount of power to be transmitted through them and the material of which they are made. A large factor of safety should be allowed on account of the impulsive power furnished by the gasoline engine. The most suitable material for these gears when relatively small (10 to 15) horsepower is to be transmitted is nickel steel or about 0.15 carbon and 3½% nickel. Steel of this character properly carbonized and heat-treated will produce a gear with an exceedingly tough and strong core, coupled with a very hard surface to resist wear.

The diameter of the smaller or driven gear should not be less than 5" for smooth running. The teeth should be of 5 diametral pitch; that is, five teeth on the circumference for each inch of diameter. A width of 1¼" across the face of the tooth should give sufficient strength for ordinary purposes, but this may be increased to 1½" or even 2" where the conditions are to be more severe.

The hubs should be made wide enough to insure perfect seating on the shafts and each gear attached to its shaft by means of two keys set 90 degrees apart.

Ball bearings should be selected carefully for good bearings are essential to the success of this mechanism. Bearing manufacturers usually prefer to state the sizes and type to be used. One large concern which advertises in Motor Boating maintains an engineering department for the purpose of supplying customers with information of this kind free of charge. The writer suggests that bearing problems be referred to the manufacturers.

Packing boxes, as shown in drawings, are necessary around both driving and driven shafts in order to prevent leakage of grease and oil.

It is preferable that the thrust from the propeller shaft be taken by a thrust bearing between the propeller wheel and the gearset. This will cause the gears to run quieter. The connection between the propeller shaft and the gearset should also be through a flexible coupling.

It should be borne in mind that a mechanism of the type illustrated is subject to very severe working conditions. The parts should be made as accurately as possible and the whole assembled so as to run easily. The gears should have, when new, a backlash of about .002" for best results.

When properly installed and filled with oil and grease this gearset should perform its duty with a minimum of attention.

A propeller speed as high as 2,000 r.p.m. can be safely attained with a mechanism of this type.

G. C. BRAINARD, Detroit, Mich.

A Home-Made Arrangement.

IN many types of boats it is advantageous from a propeller efficiency standpoint to run the wheel at a greater number of revolutions per minute than it is economical to operate the crankshaft of the engine at. In order to accomplish this end some means must be devised for transmitting the power from the engine to the propeller shaft at the desired ratio of R.P.M. The arrangement described below is a practical one and can be built by any amateur.

The frame of this gear consists of a brass rod, ½ inch thick and as wide as the keelson to which it is fastened. The length of the rod required will depend upon the height of the propeller shaft above the keelson. Both ends of this rod are bent up at right angles, as shown in the figure. The upright parts should measure 8" or 10", the lower part that is to rest on the keelson should measure 14" to 18". A piece of brass the same size as the two upright parts may then be riveted to the uprights as shown. Ordinary copper nails may be used as rivets, and the holes may be made with a hand drill after the two pieces have been clamped together. When this is done, the frame may be placed on the keel, and the position of holes for the engine and the propeller shafts determined. This must of course be done very carefully. When the places for the holes have been marked, take the frame to a machine shop and have the two holes bored in each upright piece, the diameter of the shaft. Also have the holes bored for the lag screws in the bottom part of the frame. When this is done, the frame may be fastened to the keelson, and the two shafts put in temporarily in order that the size of the gears may be determined.

The gears may be purchased for very little from one of several advertising in MoToR BoatinG. By riveting the two brass pieces on to the uprights of the frame, it makes the uprights an inch thick and thus gives a good bearing for the shafts. If it is desired, the holes in the uprights may be made larger than the shaft and then be babbited.

With this gear the engine shaft and the propeller shaft need not be parallel. In such a case a universal joint would ordinarily have to be used, but here all that is needed is bevel gears.

Iron may be used in making this frame, but the slightly higher cost on brass will pay for itself in a short time when it is considered that the frame is in bilge water most of the time.

Special attention should be paid to lubrication in order to insure quiet running with a minimum amount of wear. A mixture of graphite and oil occasionally applied, it has been found, forms a good lubricant.

W. G. L.,
Long Island City.

Advises Roller Chain.

TAKING all the types of gearing from their points of efficiency, ease of construction and quiet operation, we are most certain to conclude that the chains and sprocket gear fulfils these requirements in the greatest measure. The ordinary toothed gear running at high speed are very apt to be noisy and should be rigidly and perfectly set to mesh just the right depth. In most cases where they are under heavy load they must be run in an oil-tight case which is filled with oil or grease. Such requirements would be difficult and expensive to carry out.

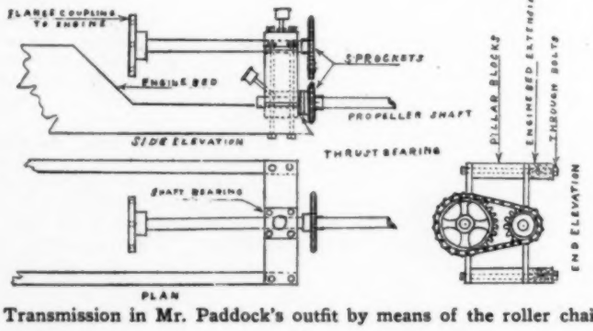
The bevel gear presents the same objections even to a greater extent. The herring bone gear is somewhat better, but not enough to warrant its adoption over the chain and sprocket gearing. The chain and sprocket gear so extensively used in automobile practice offers all the advantages of a strong and efficient transmission when adopted for boat use with the additional consideration of slight wear not having any dust and grit to contend with.

The Morse silent gear belt is a very desirable form of chain, consisting of iron, brass and rawhide in alternate sections, forming gear-toothed links which meshes around the periphery of a standard gear. They are strong and silent-running and are made in sizes to transmit any h.p. at any desired speed. However, their cost would be too high for any but a high-class and expensive craft. The ordinary roller chain offering much the same advantages is the one illustrated in the accompanying sketches. Such chains and sprockets can be obtained from the Philadelphia Gear Works at a reasonable cost.

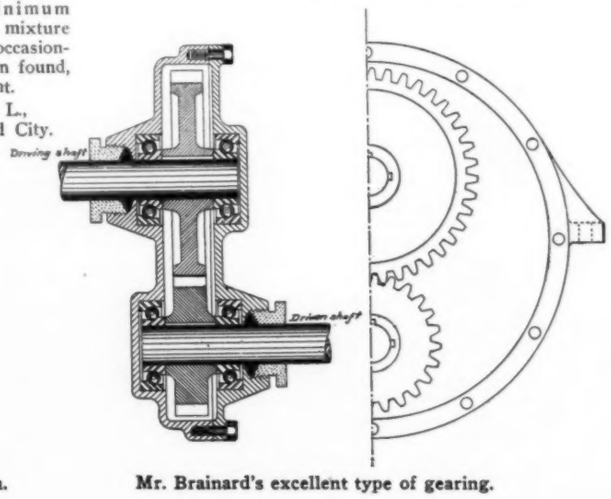
Referring to the sketches it will be seen that the whole gear rests on the engine bed extension along the boats frames. The two bearings are standard propeller shaft inboard bearings which are manufactured by most engine builders and are low in cost. The two pillar blocks accurately space the two bearings and take all tension strains caused by the pull of the chains. The thrust of the propeller is taken up at the lower bearing by three thrust collars, two outside ones of steel and center collar of brass, or if a ball bearing thrust is used a ball retainer with balls is used. In this way the whole thrust is directly transmitted to the engine bed and perfect permanent alignment assured. The coupling to the engine may be made direct to the top sprocket shaft or through a reverse gear mounted on the engine bed extension.

The through bolts holding the bearings to the bed should be a ½-inch to ⅝-inch diameter and firmly drawn up. The diameter of the sprockets should be as large as convenient, say 8 inches and 4 inches for a 20-h.p. engine with a ¾-inch width of chain. For a 35-50-h.p. engine 12 inches and 6-inch sprockets with a 1-inch chain.

J. R. PADDOCK, JR., East Orange, N. J.



Transmission in Mr. Paddock's outfit by means of the roller chain.



Mr. Brainard's excellent type of gearing.

Preserving the Wood in Boats.

Applications to Increase the Life of the Hull and Prevent Decay of Portions Exposed to Bilge Water.

THE PRIZE CONTEST—Answers to the Third Question in the November Issue.

Circulation of Air and Use of Bilge Pump.

(Prize Won—A Camera.)

THE action of the bilge water in a boat has a greater deteriorative effect on the framing and planking than that of the water in which the boat rests. Any method or preparation that will stop the destructive action of the bilge will materially lengthen the life of the boat.

The use of the bilge pumps and a circulation of fresh air under the floor are absolutely necessary as the damp, stagnant air under the flooring quickly rots the inside of the planking.

The labor of keeping the water out, especially if the seams and stuffing box are not quite tight, will be greatly decreased by the use of a power bilge pump. At any rate a hand pump should be carried in case of accident to the power pump.

To supply a free circulation of air in the bilge a four-inch Cowl ventilator placed at the extreme bow, with a four-inch galvanized iron pipe leading from it through the floor to a point about two inches above the keel and a few one-inch holes bored through the sheathing, the cockpit to the air space between it and the planking will provide a positive circulation of air the whole length of the boat at all times. Besides keeping the air fresh in the bilge, the circulation will drive out all gasoline vapor, which, being heavier than air, always sinks to the lowest point in the boat and which if confined is as explosive as gunpowder.

Now as to a preparation for prolonging the life of wood. Creosote is by far the best. Do not make a mistake here. Creosote is of two kinds, one a coal tar product and the other a vegetable tar, distilled from the wood, commonly from beech wood. This latter, alone should be used. Of less density than tar and soluble in alcohol it deeply penetrates the pores and fiber of the wood to which it is applied. The creosote should be applied in about the consistency of thick paint. In the case of an old boat the entire flooring should be removed and the inside allowed to thoroughly dry out before the painting is begun and the preparation should be carefully flowed into all cracks. The entire bottom of the boat should be thoroughly coated to a point well above the water line. The more creosote the wood will take up the better.

In a new boat it is a good plan to paint the whole inside of the boat before the sheathing is put on and, in either case, any creosote left over should be used to paint the inside of the chain locker in the forepeak.

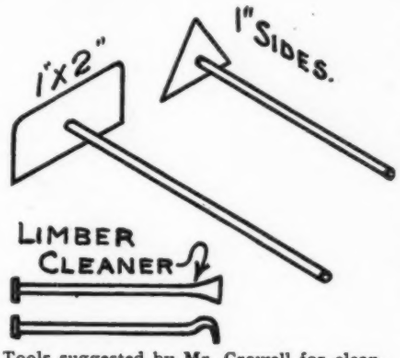
A metal pan under the engine to catch any gasoline and oil and prevent it from getting into the bilge will help to keep things clean and sweet, which is of first importance if the boat is to last longer than a few years.

HENRY CALVIN GRANGER, New York, N. Y.

A Clean Bilge is Most Important.

THE first thing after pulling into winter quarters and removing the dunnage, is to make sure the boat is blocked up so the drain hole is actually a drain and not merely an overflow. Then take up as much of the flooring as you conveniently can the full length of the boat, from the keel out to the turn of the bilge and let the air blow through the boat until the surface of the wood is dry. Give the interior a thorough cleaning.

Some good tools for getting into the corners and under the ceiling can be made of small pieces of thin sheet metal. Make one rectangular piece 1" x 2", and a triangular piece of 1" sides (see illustration). Make a small hole in the center of each. Take two 3/16" square or round soft iron rods about 12" long and file a shoulder on one end of each and rivet the cleaners on. The soft handles can be bent to get into tight places. Another piece of soft wire about ⅛" round and 6" long should have one end flattened out and goose-necked and the other headed up like a nail head. This makes a fine tool to poke or pull the dirt out of limbers.



Tools suggested by Mr. Crowell for cleaning the bilge.

Provide yourself with a scrub brush with strong bristles, a hand scrub brush and a pail of hot water with plenty of washing powder dissolved in it. Start as far up in the bow as possible and scrub and splash the water about liberally. Rinse off with clean water, dashing it into the corners with a tin can. Use the limber cleaner and see that the water flows through freely. Work back one frame at a time until you reach the drain hole, then start at the stern and work forward. Thus all dirt will wash out and leave the bilge fresh and sweet. Let the air play through until the wood is dry, then paint with pure white paint, using a large proportion of oil to turpentine and making the paint the thickness of cream.

WM. F. CROWELL, Providence, R. I.

Carbolineum to Preserve the Wood.

TWO years ago I found that the ribs and planking in my 30 ft. sloop were showing signs of decay, especially the parts exposed to the bilge water. In fact a boat builder estimated the cost of repair to be about $100.00 to put the boat in good condition. Upon investigation and inquiry I was advised of a material known as "Carbolineum" which would not only preserve wood from rotting but would also arrest further decay and at the same time harden the rotted parts, making them stand further service.

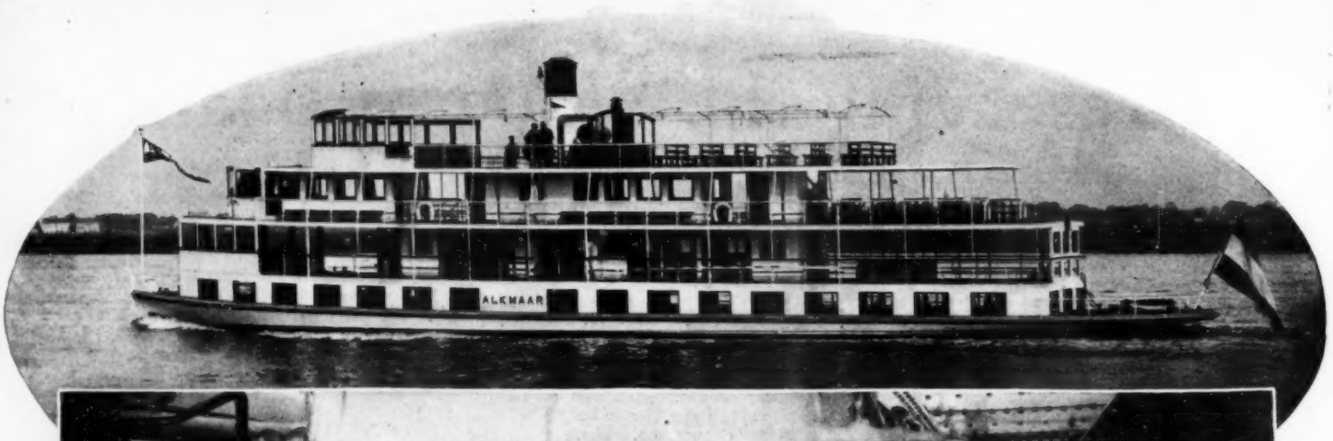
"Carbolineum" is a fluid oil of about the same consistency as gas engine lubricating oil, and is an extract of boat gas tar, the tar acids harmful to wood being removed. Wood will readily absorb this material and if applied to a temperature of approximately 150° will penetrate through one inch pine or cedar plank without any difficulty. It will not wash out with the action of water, therefore being a first class wood preservative for use on the woodwork of yachts and boats where the odor of other wood preservatives, such as creosote, etc., would be objectional. There is no crust formed similar to paint as this would create rot, on account of moisture confined in the wood.

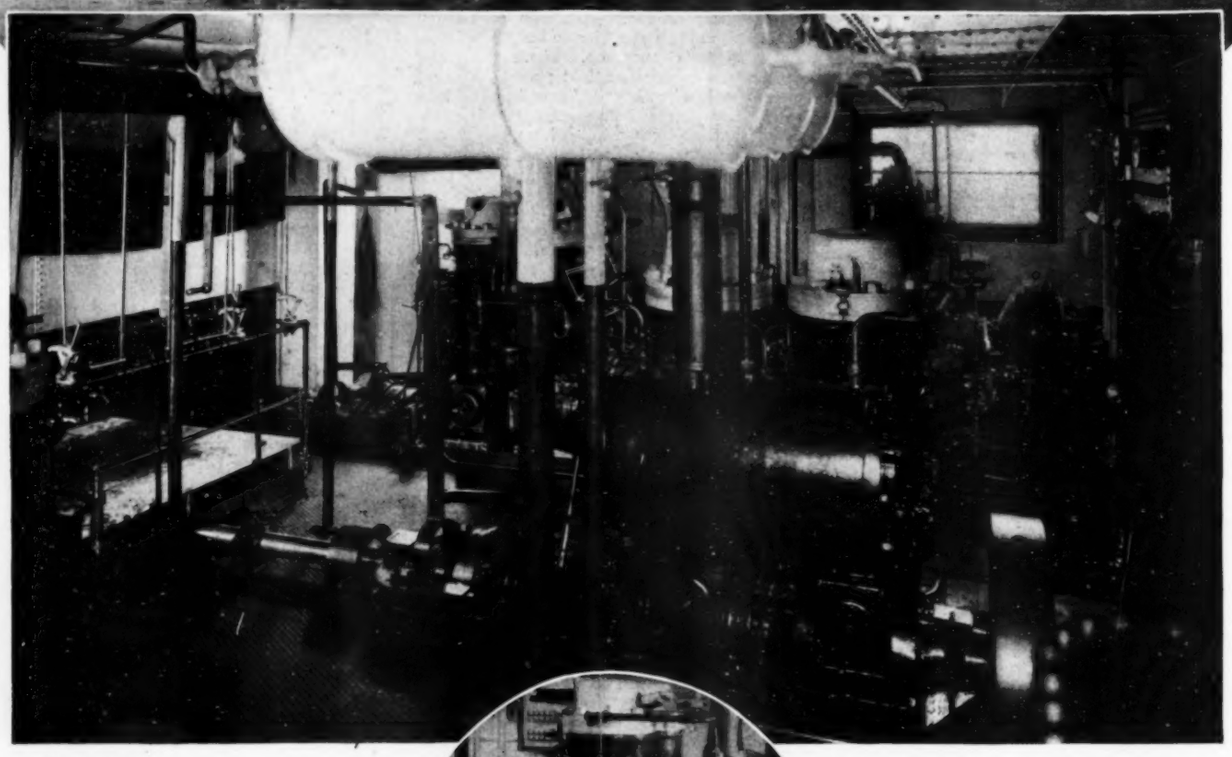
A. HOPKIN, Philadelphia, Pa.

Recommends Red Lead Paint.

NEW and old boats cannot possibly be treated to the best advantage in the same way. New boats require one treatment and old boats a different one but both new and old boats must be thoroughly dried out before anything can be done. All old paint or other coloring material must be burned and scraped off down to the wood. There is no better application for new boats than a mixture of red lead or minimum (P.63.04.) and pure boiled linseed oil using as little turpentine as possible. The red lead should be mixed into a paste with the boiled oil on a piece of glass with a palette knife and when thoroughly mixed and ground up transferred to a pot adding the oil stirring thoroughly and using only enough oil to enable the red lead to be spread evenly over and well rubbed into the wood. This simple preparation will preserve new wood probably longer than any patent or other preparation, it is easy to prepare and apply, absolutely clean, easily renewed and of good appearance on the inside of a boat when bottom boards have to be lifted for any purpose. The outside should be treated in same way below and above water line. The red lead paint can then be painted over with whatever color the owner fancies and finished off with enamel or anti-fouling composition according to taste. Old boats require a totally different treatment. The wood will probably not be in the best condition and inclined to leak. In such case the most suitable preparation for the under-water portions, both inside and outside is undoubtedly "black varnish," a preparation of refined coal tar and naphtha of various grades and qualities according to the price paid and the locality in which purchased. For outside work always use the best that can be procured adding a little good quality naphtha and as the residue in the paint pot thickens thinning it from time to time so that it will always run freely off the brush and not streak. For the inside when the old paint has been all removed see that all chips and scrapings are cleared out and the openings or waterways between the ribs and planks of a Clinch boat are clear and free from dust and dirt. Thin the black varnish down well with naphtha and paint over the bottom inside rubbing in the varnish and passing the brush in and out of the waterways under all the ribs. The black varnish being well thinned with naphtha will soak deep down into and preserve the old wood in a way that it could not do if applied thickly. When thoroughly dry give a second coat of varnish thinned only sufficiently to run easily off the brush. Then obtain about one gallon refined tar and about 4 stone of pitch from the gas works. Boil the tar in the open and add the pitch, stirring well until dissolved, then dip a stick into the mixture and let a few drops fall off into some water. If the drops set remaining slightly soft but not sticky the mixture is correct. If the drops are brittle add more tar and if sticky add more pitch. The mixture is best boiled in the open in a large bucket on a wickless oil stove and take care to keep a heap of fine sand handy to throw over the mixture in case it catches fire, which it is very liable to do if allowed to boil fiercely.

MRS. H. R. CRAIG, Rosinle Bray, Ireland.





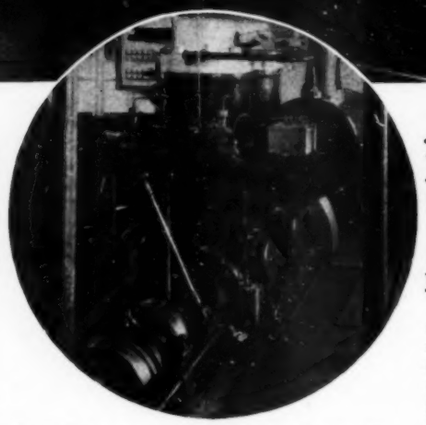
Alkmaar

A Motor Driven River Boat of Shallow Draft:-

Her Three Two-Cycle 90 h. p. Motors Using Crude Oil Fuel.

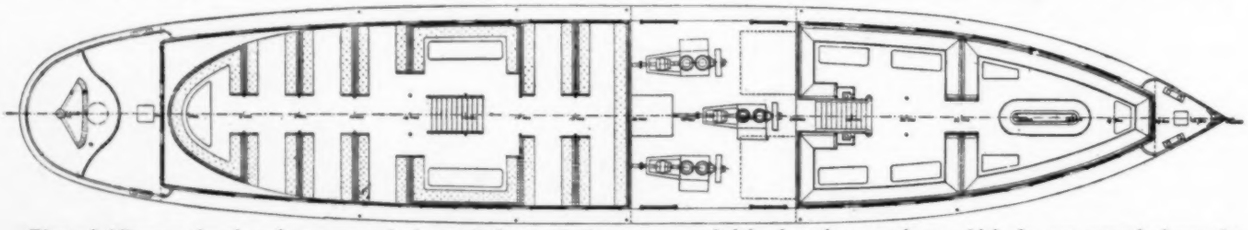
ALKMAAR is a shoal draft river boat with a seating capacity of one thousand passengers and is an extremely interesting example of the strides that are being made in this line by the continental countries. She was built by the Netherland Ship Building Company, Ltd., of Amsterdam for the Alkmaar Packet, Ltd., and makes the run between Alkmaar and Amsterdam.

It was a great problem to build a boat capable of carrying from 1,000 to 1,500 passengers with a draft sufficiently light to navigate the Zaan River, the average depth of which is only 6 to 7 ft. and in fact a screw propelled steam craft was practically out of the question.



One of the three 90 h.p. oil burning engines shown above.

Alkmaar is 134 ft. overall by 25 ft. beam and is equipped with three Kromhout two cylinder crude oil engines of 90 brake horsepower each. These engines work on the two cycle principle, developing their power at about 280 r.p.m. and there is a 12 h.p. motor of the same make directly connected with the electric lighting and heating plant and system of pumps as shown in the upper right hand corner of the middle photograph. The engines are started by compressed air maintained in three tanks by the engines themselves and the reversing mechanism and slowing down arrangements are all placed on one platform in the after part of the engine room, enabling one engineer to control all three engines. Special care was given to the design of the steering gear. The wheel is connected with the rudder by shaft supported in ball bearings working an eccentric gear wheel which actuates an oval quadrant fixed to the rudder head.



Plan of Alkmaar showing the comparatively small fore-and-aft space occupied by her three engines, which do not extend above the lower deck.

EXPORTING

An Article on the Export Trade in Marine Motors and Accessories and Some Suggestions for American Manufacturers.

By B. Olney Hough.
Editor American Exporter.

TWO million dollars' worth of American marine motors were exported last year. The continued rapid expansion of our export trade in this line is illustrated by the official statistics of exports of gasoline marine motors for the first two months of the government fiscal year—July and August, 1912—which show that instead of 912 motors shipped in these two months of 1911, 1,918 motors were shipped in the corresponding period of this year. The value of these motors for the two months of 1911 was a little more than $168,000. The value of this year's shipments for July and August was $275,000. We have, therefore, begun the new fiscal year by shipping abroad 500 more marine engines every month than was last year's record.

The official statistics for the fiscal year of 1912 enumerate gasoline marine motors exported to the number of 8,595, valued at $1,347,199. These figures, the first ever published, do not, however, include shipments of oil engines, nor do they include our exports to Porto Rico, Hawaii and the Philippine Islands, which are generally and properly counted export markets, although officially termed "non-contiguous territories of the United States." Furthermore, it is altogether probable that a goodly number of our exports in this line have been mistakenly included in the figures enumerated under "gas engines" or "stationary gasoline engines," since many clerks in clearing shipments at the custom house carelessly, or ignorantly classify the goods they are clearing. Add to the foregoing figures exports for the year of 596 complete motor boats valued at $684,329.

According to detailed figures kindly supplied by the Bureau of Foreign and Domestic Commerce, although not yet published, our exports of gasoline marine engines only, were last year distributed among eighty-five foreign countries. Leaving Canada out of consideration, our principal markets in the order of their importance were British Australia, Argentine, New Zealand, Russia in Europe, Sweden, the United Kingdom, Norway, Germany, Mexico, Finland, Brazil, Denmark and Cuba, these markets ranging as buyers of our motors, worth from $127,596 for the year down to $33,369, and they are followed in the table of statistics by a long line of other customers, running down to one motor valued at $61 shipped to French Africa.

Probably no American manufacturers today enjoy a more brilliant future, so far as export trade is concerned, than do our makers of marine motors. The appearance in our own ports and in South American ports, and the voyages from Europe to the Far East of ocean steamships of large tonnage equipped with internal combustion engines, has opened the eyes of the whole world to the future that awaits this form of prime mover. Motor boat races are growing in popularity, or at least in numbers, and motor installations in work boats of every description as well as the motor yacht and yacht tender continue the progress that has been so notable during the past three or four years.

American marine motors, it is evident, are more than holding their own. So much more, in fact, that the day seems fast approaching when in many foreign markets it will not so much be a question of competition between American and foreign motors as a question of American manufacturers competing against other American manufacturers in far away lands. There is no longer room for argument as to our possibilities. They have been amply demonstrated and future success in any given line is bound to depend chiefly upon the intelligence and the aggressiveness which the manufacturer of that line devotes to the cultivation of his business in promising foreign territory.

Some of our manufacturers, it is pleasant to note, have taken up the export business in the right way, but in spite of our large foreign trade, in spite of the rapid progress it is making, it seems worth while repeating a note of warning which the writer has already sounded. There is one danger—only one real danger—that confronts American export trade in motors as in other lines. It is not conceivable that it should prove an actually serious danger, for pride and confidence in the ability and the judgment of our American manufacturers, based on considerable experience with them, are sufficiently convincing that we shall rise to the requirements of the situation. However, the sooner we put our export departments in order the better for all concerned. The more firmly we establish our export trade on a sound and permanent basis, the more tenacious will be our hold on foreign markets.

The plain truth of the matter is that a good many of our manufacturers rest content with orders that have just happened to drift in to them, are satisfied with the shipment of an occasional motor or two or three motors for this, that or the other market, and are not devoting any adequate thought and study to campaigns for the winning of foreign markets, are not working out a scientific basis on which to build an adequate development of the possibilities that have been pointed out to them—in a word, are not properly taking care of their foreign customers.

In marine motors as in the case of most other American products the greater part of export business is done and must always be done through correspondence. Doubtless the most important lesson in export trading is that on turning inquiries into orders through correspondence. No matter how many salesmen a manufacturer may send abroad, no matter how adroit those salesmen may be, there will always remain a large portion of any manufacturer's business in foreign lands that must be handled by letter and in a great many cases it is the first letter or the first impression that counts for most, although a good follow-up system is an absolutely essential adjunct to any successful export department.

An export department ought to be something more than a name, and the manager of such a department ought to be worth to any serious manufacturer a good deal more than $15 or $20 a week. The disposition seems to be common among manufacturers of marine motors, as it is indeed among all manufacturers, to hire a man capable of writing two or three languages, dub him export manager and let it go at that. Whereas facility to converse or correspond in two or more languages is chiefly valuable as an asset to an export manager as an indication of his first-hand knowledge of foreign peoples and markets, translations may be obtained easily and cheaply as they are required.

The manufacturer's export manager not only ought to have a thorough acquaintance with export markets, a familiarity with export procedure and technicalities, be versatile, quick to acquire the details of the manufacturer's business and the strong talking points in his line, but first of all and before anything else he should be a salesman. Contrary to the general impression, price is by no means always the prime consideration among foreign buyers. The export manager ought to know how to present the manufacturer's claims for his goods so forcibly and convincingly as to make sales at profitable prices. Buyers of motor boats, like buyers of everything else, in all parts of the world are perfectly willing to pay a good price for a good article, providing the peculiar advantages of that article are convincingly presented.

The novelty of doing business with strange and distant parts of the earth seems sometimes to turn export trade into a sort of toy for some export managers, or it would probably be better to say, for some manufacturers of comparatively little experience in the export field. Some men seem to find a peculiar pleasure in diligently exploring maps for unknown nooks and corners and a rare energy and enthusiasm is devoted to the task of planting a chance motor in some uncivilized part of the world of whose very name most

people have never heard. A single order for a boat on Lake Victoria Nyanza, may perhaps, immensely flatter the pride of a manufacturer and no one surely will advocate ignoring or neglecting any possible market, yet it seems the part of wisdom for a manufacturer to direct his chief efforts to the largest, or at least, the most promising markets—this on the supposition that every one's time is more or less limited. Spare time devoted to cultivating the trade of a customer in a big market, giving that customer advice, hints, and practical assistance will, as a rule, result more profitably than the division of time and effort among a large number of markets that have attracted because strange, but that are never likely to rank anywhere except among the insignificant ledger accounts.

It is in co-operation with established customers or agents that most manufacturers fail most conspicuously. Such manufacturers seem to feel that having established an agency all they are thereafter called upon to do is to await the results of the good will or the activity of the agent and accept gratefully such orders as he may send. An order for two or three motors, even if such an order is repeated two or three times a year, may however, represent only a fraction of the trade that the manufacturer ought to have in this agent's territory. Every order received ought to be taken as a clue to a market susceptible of development. Co-operation with the agent is the surest way of ensuring that development. Doubtless the most satisfactory co-operation is that of a personal visit to the agent of a factory representative. This cannot, of course, be arranged in every instance, yet as a manufacturer establishes agencies that promise well in apparently important markets the personal relation ought to follow at the earliest possible moment in as many cases as possible. The enthusiasm and the more intimate acquaintance with the technicalities of the motor thus imparted to the agent will help him enormously, and acquaintance with him and familiarity with his territory will help the manufacturer or his export manager in hardly less degree.

Mr. Hough.

If a stock of spare parts can be established with each agent who controls a large territory, or if such stocks can be divided among several central locations available to many agents in immediately tributary territories, either for the manufacturer's own account or for the account of some agent, so much the better for all concerned, including not only the manufacturer and the agent but the motor boat owner.

Cash with order or cash before the delivery of goods is a highly satisfactory arrangement to nine out of ten manufacturers. Marine engine manufacturers have found many foreign customers willing to agree to such terms yet there is an aspect of this question which is sometimes forgotten. The other day a United States consul complained of his lack of success in introducing American motor boats in his consular district, because of the apparent indifference of a certain manufacturer to an excellent opportunity that was offered. A perfectly reliable local dealer stood ready to purchase immediately three or four heavy duty motors providing that one, valued at something like $100, should first be shipped for examination, trial and approval before payment. The manufacturer was not willing to meet these conditions. The consul in question, absorbed by his interest in developing business in his own district, apparently forgot that the motor manufacturer in the United States had doubtless received at least a hundred similar propositions from as many different cities in the course of a year, or if he had not received them could easily obtain them from a hundred or from a thousand foreign buyers, and that but few manufacturers enjoy the use of sufficient free capital to enable them to take advantage of every such offer, no matter how good. While this position of the manufacturer is well founded, yet there is something to be said on behalf of the consul and his complaint. It is altogether probable that in preferring cash customers manufacturers have often made the mistake of selecting second rate agents able and willing to put up cash for a sample order or for all orders, rather than first rate men who might be in a position to do two or three times the annual volume of business the second rate man is ever likely to offer. Naturally enough it is the first rate man—the big man—with whom any given manufacturer is sure to encounter the strongest competition. The best man in a market is known by name or fame to every manufacturer the world over, most if not all of whom are continually importuning him to buy their goods.

While possibly no manufacturer in the United States can, even if he would, accept every proposition made to him by thoroughly good would-be customers, yet many a case may arise where an otherwise inflexible rule ought to be waived in order to secure a footing with an especially desirable connection. Manufacturers can well afford to spend, or at least to risk, a comparatively small sum in the effort to get business started with a particularly good connection in a promising foreign territory. This is one of the ways in which foreign business differs but slightly from domestic business.

The well-lighted interior and the bridge deck.

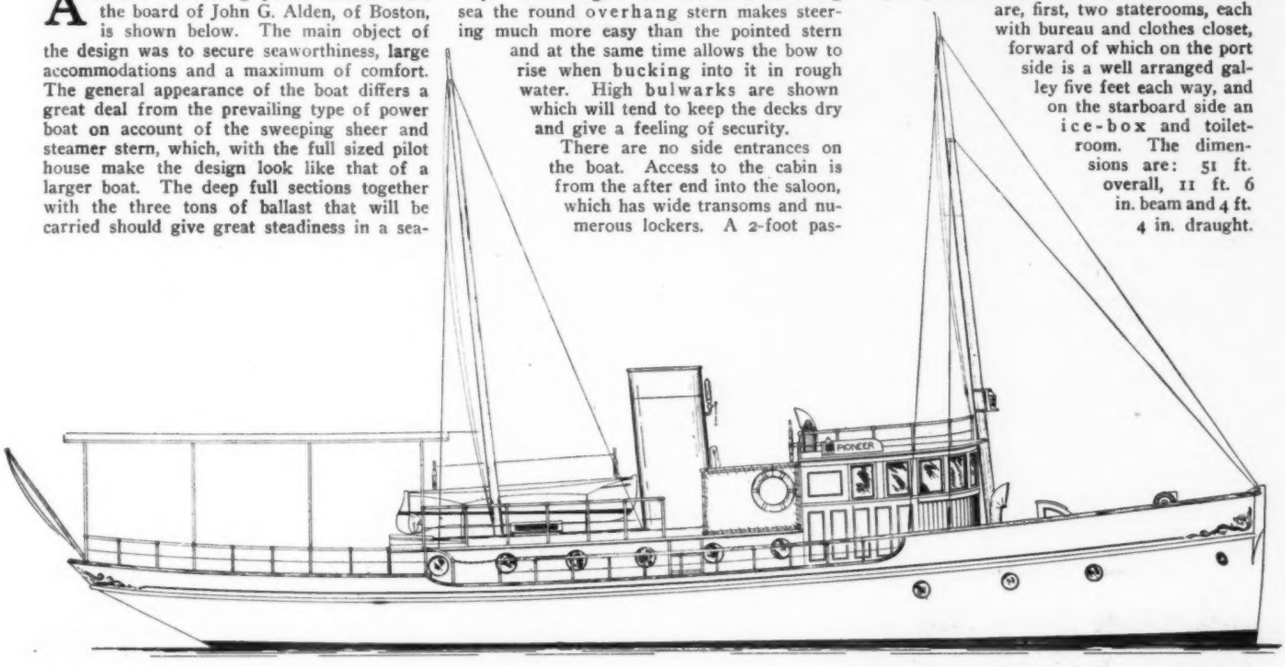
Mohawk, a 60 footer of 15 ft. beam and 4 ft. draft equipped with two 25-30 Sterling engines. She was built by the Niagara Motor Boat Company of North Tonawanda, N. Y., for Mr. H. W. Russel of Rochester for use on Lake Ontario.

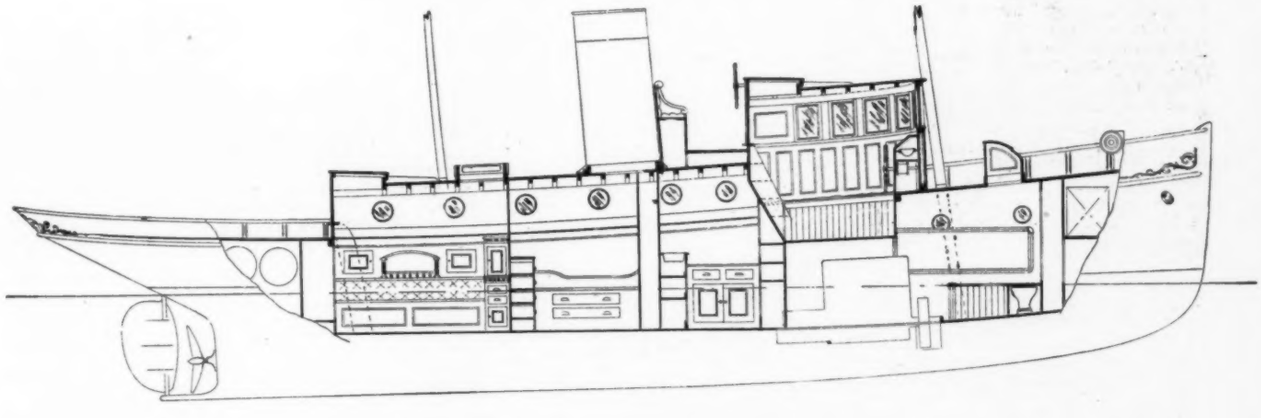
NEW MOTOR BOAT DESIGNS

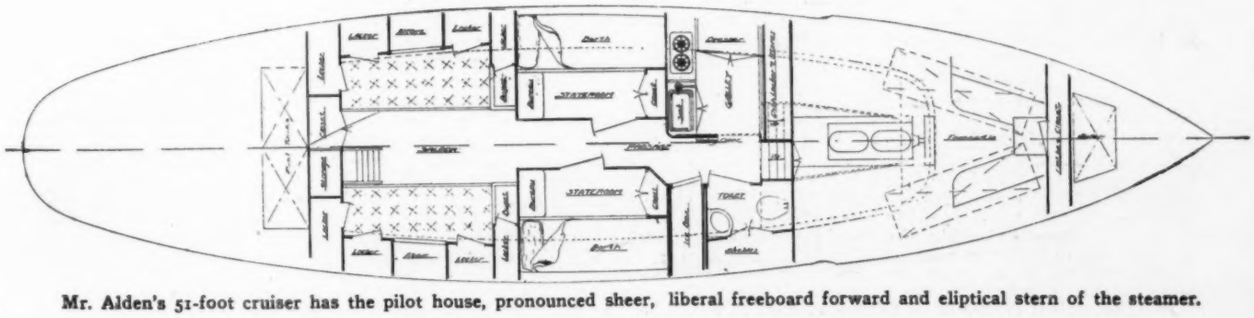
51-Footer with Pilot House.

A VERY interesting power cruiser from the board of John G. Alden, of Boston, is shown below. The main object of the design was to secure seaworthiness, large accommodations and a maximum of comfort. The general appearance of the boat differs a great deal from the prevailing type of power boat on account of the sweeping sheer and steamer stern, which, with the full sized pilot house make the design look like that of a larger boat. The deep full sections together with the three tons of ballast that will be carried should give great steadiness in a seaway. The designer believes in a following sea the round overhang stern makes steering much more easy than the pointed stern and at the same time allows the bow to rise when bucking into it in rough water. High bulwarks are shown which will tend to keep the decks dry and give a feeling of security.

There are no side entrances on the boat. Access to the cabin is from the after end into the saloon, which has wide transoms and numerous lockers. A 2-foot passageway leads forward, on both sides of which are, first, two staterooms, each with bureau and clothes closet, forward of which on the port side is a well arranged galley five feet each way, and on the starboard side an ice-box and toilet-room. The dimensions are: 51 ft. overall, 11 ft. 6 in. beam and 4 ft. 4 in. draught.







Mr. Alden's 51-foot cruiser has the pilot house, pronounced sheer, liberal freeboard forward and eliptical stern of the steamer.

A 73-Footer for General Cruising.

A Larger Craft Characteristic of the Designs of Messrs. Bowes & Mower.

THE plans on this page show a seventy-two-foot raised deck cruiser designed by Messrs. Bowes & Mower, for use on the Great Lakes. The new boat is to take the place of a fifty-footer by the same designers and in placing the order for the new boat the owner specified that it must be on the same lines as the old one, as she had been satisfactory in every way with the exception that she had proven too small to give the accommodations desired.

In general design the boat is of the type developed by this firm for ocean racing as the type has proven to be extremely well suited to the requirements of general cruising. The outboard profile shows the straight stem and raking Norman V transom stern. The sections forward are sharp at the waterline with a decided flare at the deck to make the boat dry in rough water. The midship section shows a straight floor with good deadrise and a good bilge giving the necessary stability and at the same time the weights have been placed so as to make her an easy roller.

The arrangement plan shows the engines installed amidships between two water-tight steel bulkheads, the gasoline tanks being located in the engine room. The galley is under the bridge deck and is reached from the main saloon which is in the raised deck house. The saloon has a wide transom seat across the forward bulkhead with built-in bookcases at either end. At the aft end are the stairs leading to deck and to galley with a built-in writing desk between. On the port side is a sideboard and on the starboard side a large locker. On either side there are folding Pullman berths instead of the usual extension transoms.

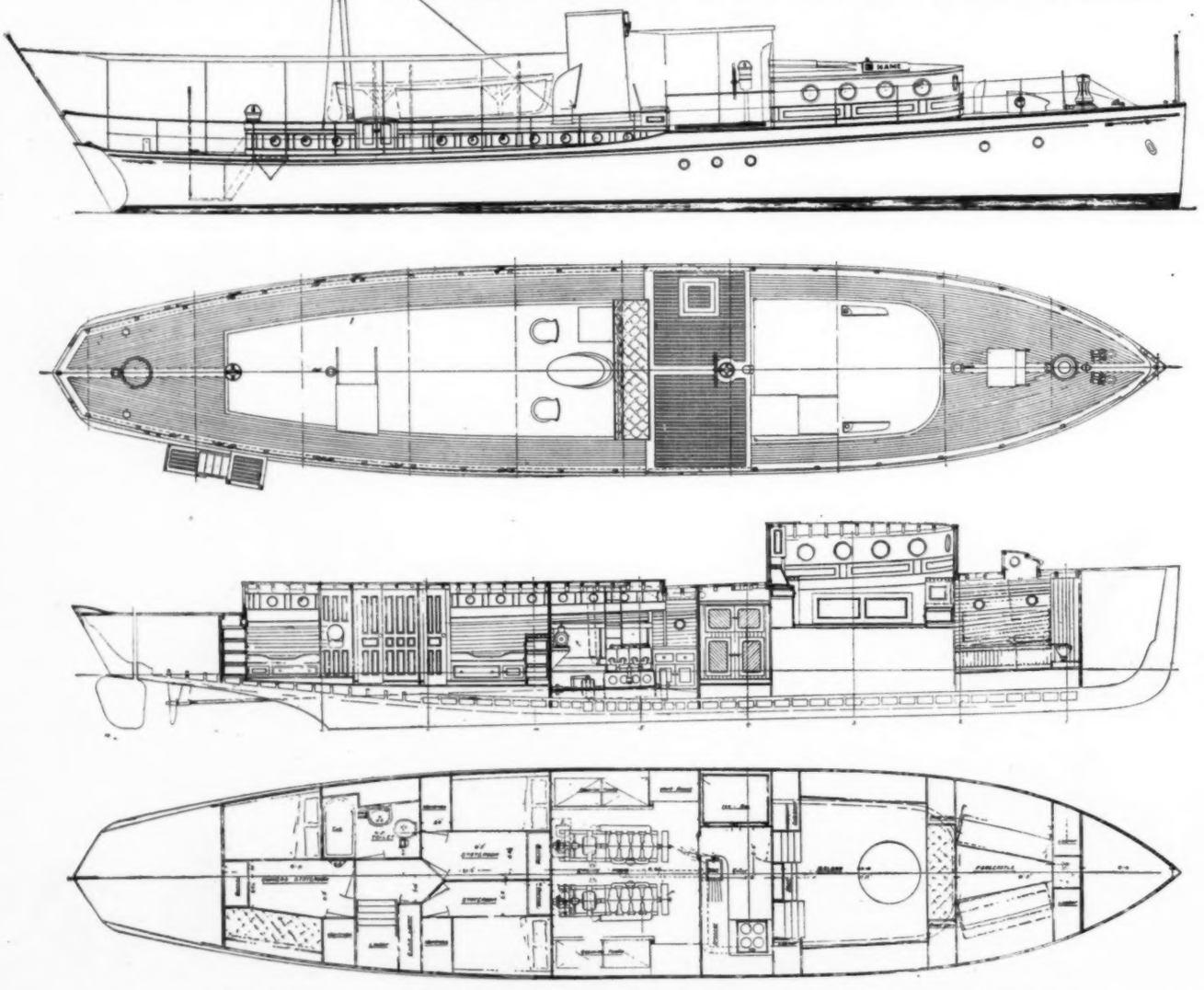
The sleeping accommodations are aft and are reached by a companionway on the starboard side. The companionway steps land in a vestibule from which doors open into the bath room and the three staterooms. The owner's stateroom is aft and contains a wide double berth and a transom that can be made up as a berth if necessary. Forward of the companionway there are two guests' staterooms with wide berths and the usual bureaus, lockers, etc. The crew's quarters are in a separate forecastle in the bow of the boat where there are pipe frame berths for four men, lockers and a crew's toilet. The space under the deck house is used for water tanks and general storage.

Throughout the boat the accommodations are large and roomy and the designers have not made the mistake of trying to get so much in the boat as to make her quarters so cramped for room that she would be uncomfortable to live on. The deck space is also a feature of the boat as she has an unusually large bridge deck and wide decks on either side of the after deck house. The after deck is 11 ft. long, giving ample room for deck chairs. Good ventilation throughout the boat has been provided by the use of large ports and ventilators. The funnel serves to ventilate the engine room and also takes care of the exhausts from the two engines and the galley stove pipe. Two large cowl ventilators drive fresh air into the engine room and the stack serves as an uptake to carry off the bad air.

A direct connected generator set in the engine room furnishes current for lighting the boat throughout with electricity. She will be driven by two heavy duty engines developing 40 h.p. each and will have a cruising speed of 12 miles per hour.

The dimensions are: length overall, 73 feet; length waterline, 69 feet; breadth extreme, 13 feet 7 inches; draft extreme, 3 feet 8 inches.

The design is particularly interesting as it is intermediate in size between two rather distinct types of craft, i.e., the larger ones that can accommodate a pilot house with headroom below it and those smaller ones where merely a



The 73 foot cruiser has a number of features that have proved successful in the ocean racers designed by this firm.

trunk is possible. In this boat the house is somewhat higher than the usual trunk, but is dropped sufficiently to cut down the top hamper and still leaves a large stowage space beneath it.

It will be noticed that ports are used in both trunks instead of windows as they are stronger and safer for sea work, although of course not affording quite so much light for the interior. The sky lights were omitted for the same reason. An interesting feature of the equipment is the second binnacle installed at the after end of the cabin trunk. This may be used for reference or for convenience in steering in case the steering gear should become deranged, making it necessary to steer with the tiller. The new boat will be a prominent addition to the inland fleet.

A Tender for the Salmon Fisheries.

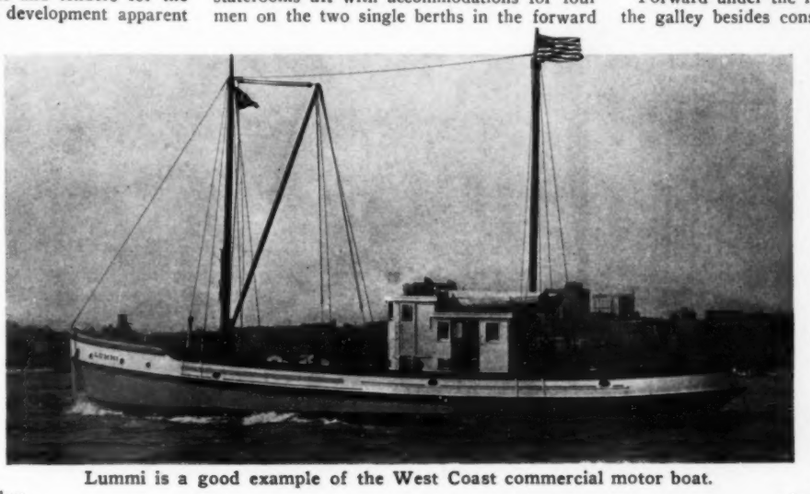
Designed by Messrs. Lee & Brinton—of Seattle.

IN the development of the motor boat for commercial purposes, the Pacific Coast is considerably ahead of the east. Particularly in its towing craft and tenders for the fishing industry is this development apparent and the boat shown in the design and photograph herewith is characteristic of the latter type of craft. She was designed by Messrs. Lee & Brinton, of Seattle, Wash, for the Lummi Bay Packing Co.

Due to the comparatively small space occupied by the motor which, in this case, is installed below the deck-house, and the cheapness of the distillate upon which it runs, this type of boat is rapidly replacing the steam craft used heretofore in similar fields.

It will be seen that the deck structure takes but little room, leaving ample deck space for cargo, as well as large hatches to the hold, both forward and aft. The spars are used primarily as derricks for loading and unloading the cargo, although provision has been made to carry a small spread of sail in making long outside runs.

The deck-house is divided into a raised pilot house forward and two comfortable staterooms aft with accommodations for four men on the two single berths in the forward room and a double berth in the after compartment. Several men can, therefore, live aboard comfortably.

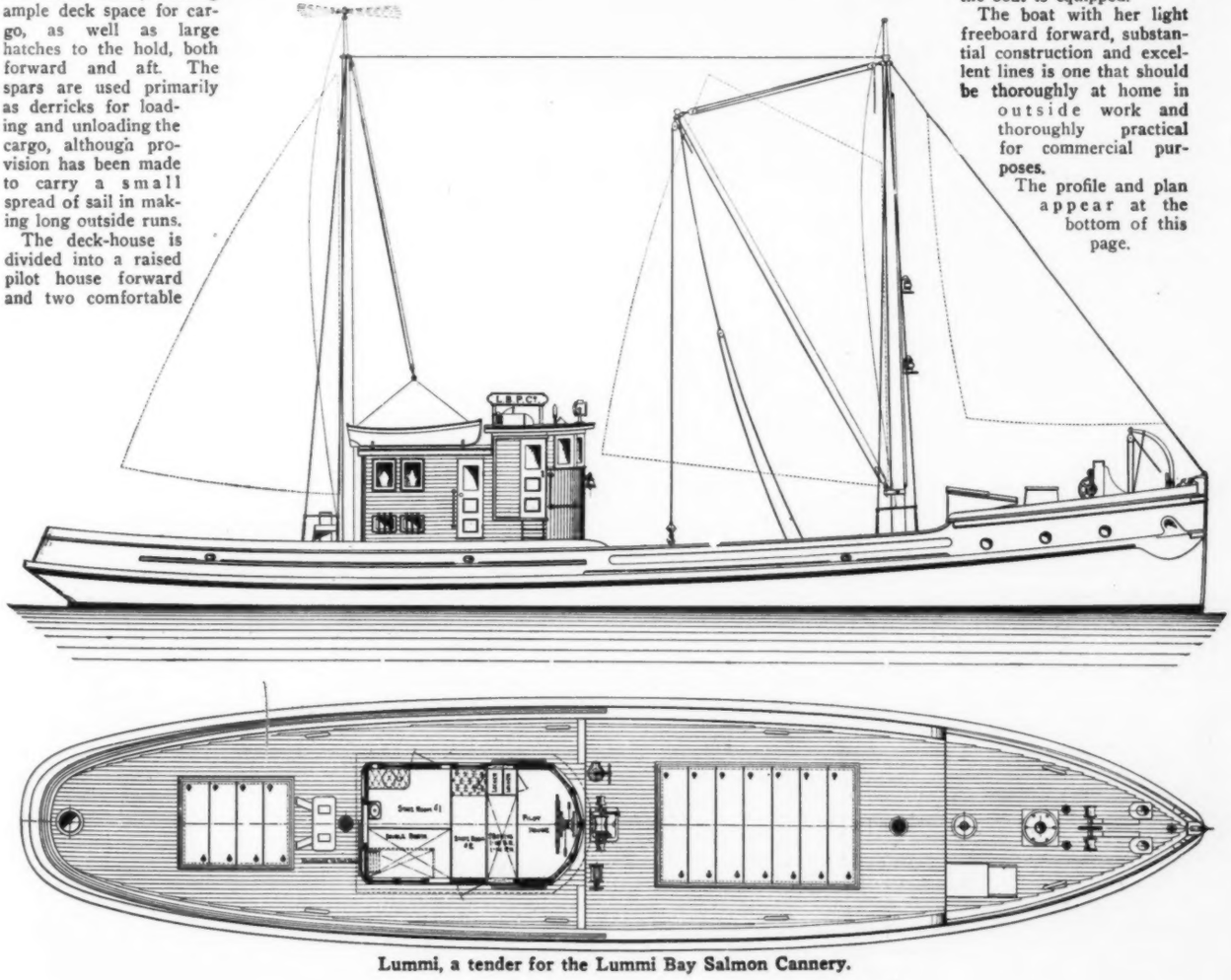


Lummi is a good example of the West Coast commercial motor boat.

Forward under the raised forecastle head is the galley besides considerable stowage space and the usual chain locker. Aft there is a manhole to the lazarette through which the quadrant and steering lines may be adjusted and just aft the house are a pair of sturdy bitts so that the boat may be used for towing. The tender is carried on the top of the deck house to get it out of the way and is launched by means of a sling and a tackle running to the masthead somewhat in the same manner that dories are handled by the fishing schooner. A searchlight is carried, supplied with current from the regular electric lighting set with which the boat is equipped.

The boat with her light freeboard forward, substantial construction and excellent lines is one that should be thoroughly at home in outside work and thoroughly practical for commercial purposes.

The profile and plan appear at the bottom of this page.



Lummi, a tender for the Lummi Bay Salmon Cannery.

A Twin Screw 90-Footer.

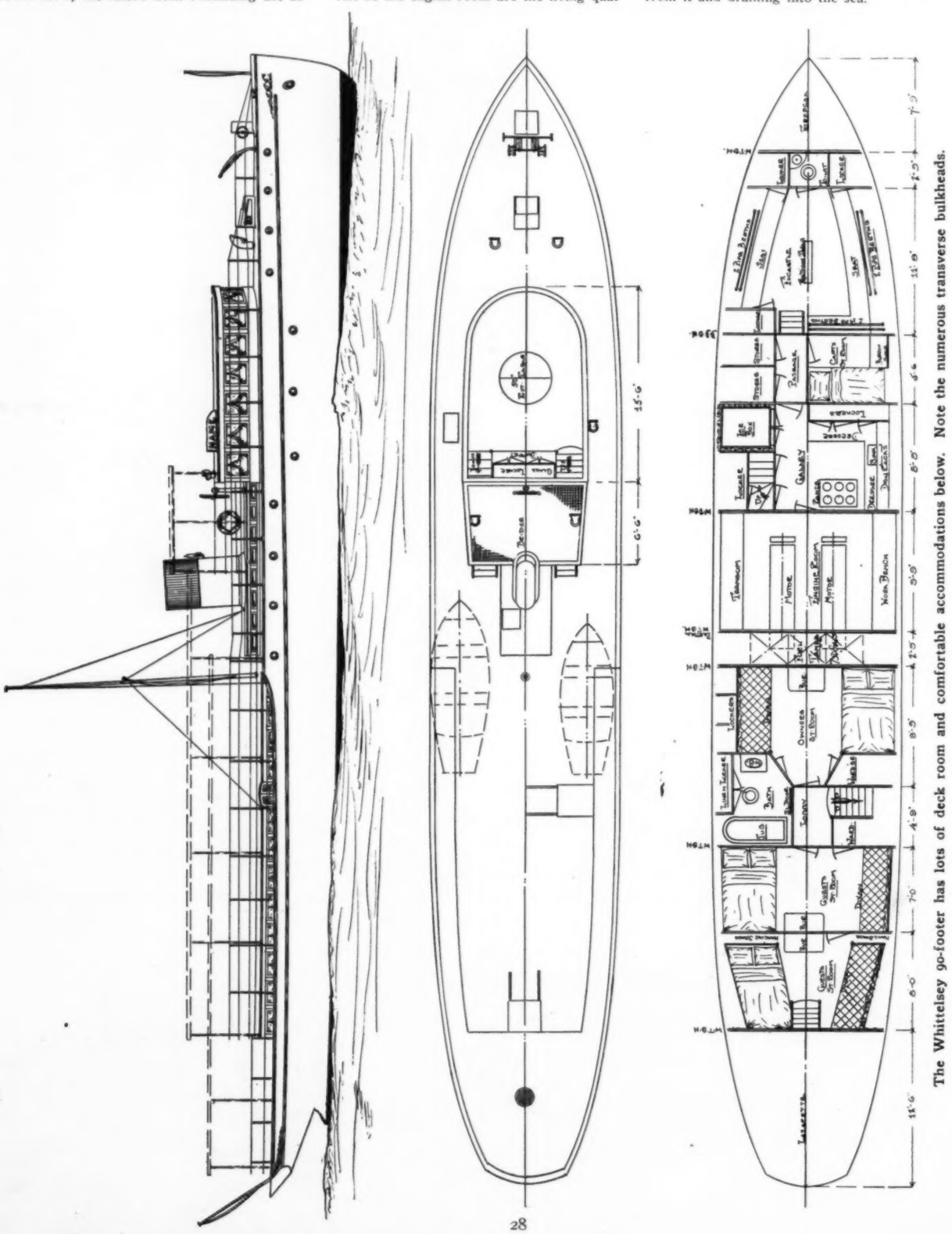
THE 90-foot motor yacht shown on this page is typical of the work of Messrs. Whittelsey & Whittelsey, New York City, whose motor yachts are well known throughout the East. Her principal dimensions are 90 ft. overall, 15-ft. beam and 4-ft. 3-in. draft, and she is equipped with two 90-h.p. Sterling engines, giving a speed of 15 miles an hour.

The boat is of the raised deck type with a sunken house forward, aft of which is the bridge deck and a low trunk over the engine room. About amidships the sheer drops to a lower level, the raised deck continuing aft as the roof of the cabin trunk which gives practically as much deck space aft as though the deck were flush at this point.

The engine-room, which is a trifle forward of amidships, is well ventilated by the stack and the trunk above it and it divides the boat into two distinct parts. The forward part of the boat is devoted to the forecastle, the captain's stateroom, the galley, storage lockers, etc., above which is the sunken deckhouse, which is used as a dining-saloon. It is connected with the galley below it by a stairway.

Aft of the engine-room are the living quarters consisting of a full-width stateroom for the owner, a large bathroom opposite the lobby and two full-width guests' staterooms aft. All the staterooms are large and there is none of the cramped appearance presented by too much subdivision of the quarters.

The power plant consists of two six-cylinder heavy-duty Sterlings of 6½" bore and 8" stroke, developing their 180-h.p. at 400 r.p.m. The gasoline tanks have a capacity of 1,700 gallons and are installed in a copper-lined compartment aft of the engine-room, bulkheaded off from it and draining into the sea.



The Whittelsey 90-footer has lots of deck room and comfortable accommodations below. Note the numerous transverse bulkheads.

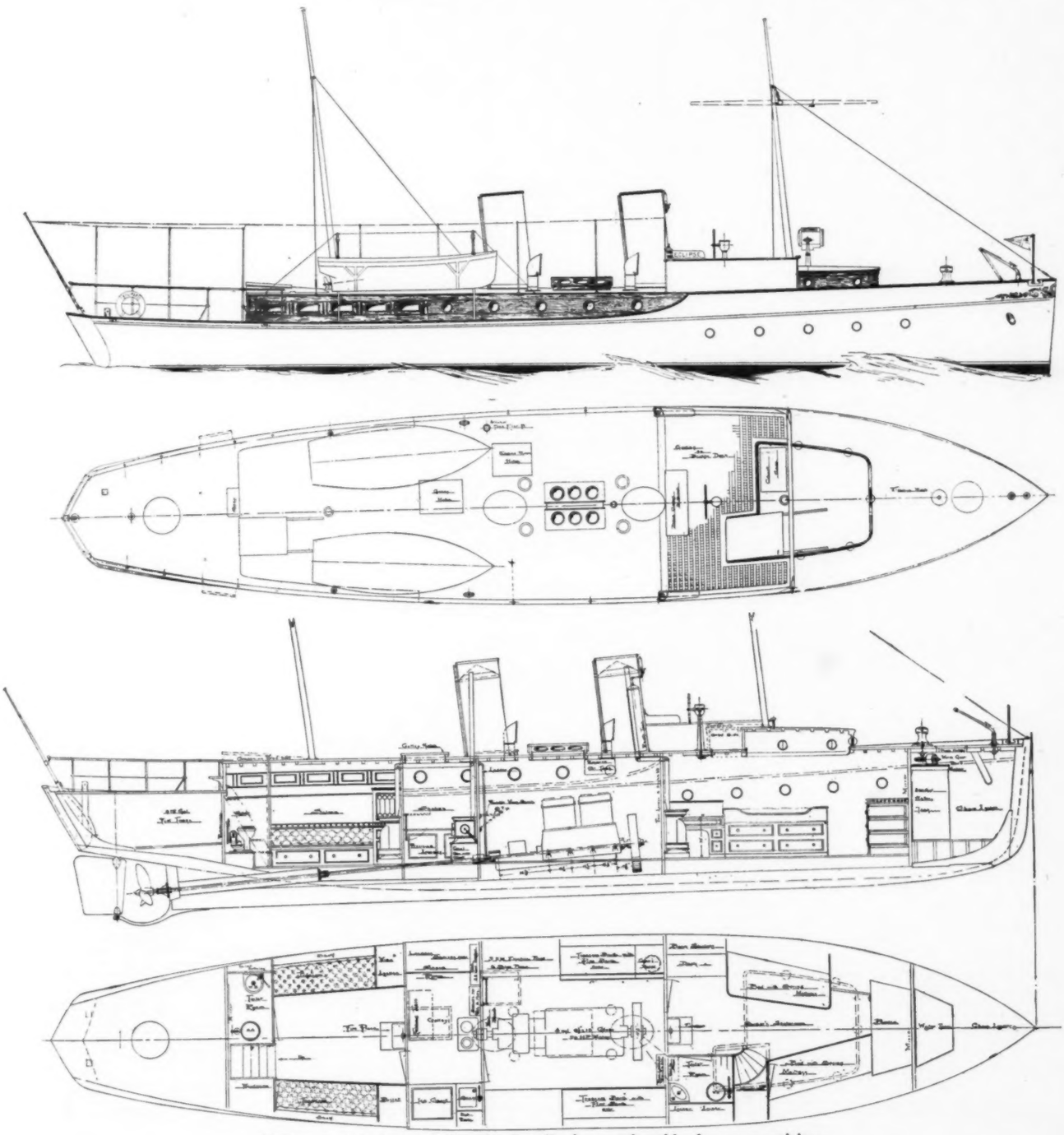
A 60-Foot Seagoing Cruiser.

Designed by J. Murray Watts and Equipped with a Heavy Duty Globe Engine.

THERE is building for Mr. Horace A. Beale, Jr., president of the Parkesburg Iron Co., of Philadelphia, a 60′ cruiser from designs by J. Murray Watts. These plans show a type of cruiser which has proved very popular of late years. The keynote of the whole design is seaworthiness and reliability. The dimensions are: 60′ long, 12′ beam and 4′ 6″ draft. The construction is extremely heavy throughout, the frames being 2″ x 3″, and the planking varying from 1½″ to 1¾″ hard pine. The displacement is 20 tons. The motive power is a 4-cylinder, 8⅛″ by 10″ Globe engine of 50-60 h.p. The engine is located amidships in a 12′ engine room, which gives plenty of space to get all around the motor for adjustment or repairs. This engine turns a 42″ diameter three-bladed bronze propeller with a pitch of 53″ at 350 r.p.m. This gives the boat a sustained sea speed of 12 miles. Besides the main engine there are two 3-k.w. electric plants and a large storage battery. The electric plant is made large as it is necessary not only to take care of the incandescent lights, but also to run the 2,000-c.p. searchlight, the 2 h.p. electric capstan, the electric bilge and fire pumps, the electric stove for use in summer, and the electric fans. Moreover, a wireless plant is being installed which will have a range of 200 miles.

The living quarters are so arranged that the owner has a stateroom forward 15′ long in which are two beds, a bureau and a wardrobe, a desk and a fireplace. There is also a toilet-room connecting to the stateroom. A curved stairway of Colonial design leads from the owner's stateroom to the bridge deck. The dining-saloon is in the after part of the boat and is 11′ long, with a stairway leading to the after deck. This dining-saloon has two leather upholstered divans, a wine locker, a buffet and linen locker and a Franklin stove.

(Continued on next page)



Eclipse is a 60-footer designed primarily for comfortable deep sea cruising.

There is also a toilet-room on the port side.

Aft of the dining-saloon is the galley which is unusually large, being 4′ 6″ by 11′, having large storage space and ice chest, sink and Shipmate stove. In summer time an electric stove will be used. The crew's quarters are amidships and there are two pipe berths and two transom berths so that four men can be carried on a long cruise. The crew have a separate toilet and wash basin, and locker space for their clothes.

The owner's quarters are finished below in panelled mahogany; the outside finish is East India teak. The crew's quarters and engine-room are finished in brown paint and the toilet-rooms in Effectile. The galley is also finished in Effectile.

The outboard appearance of the boat is especially pleasing. There are two funnels and two pole masts, and a roomy bridge from which the boat is steered and controlled. The forward deck has bulwarks around it and the after deck has a teak railing supported by forged steel stanchions. Two 12′ power tenders are carried on davits. The sail plan is large enough to steady the boat in a seaway and consists of staysail and trysail, and there is also a big square sail on the foremast for running.

This boat will be able to go to sea in all weathers and can make the trip from Philadelphia to the West Indies without any discomfort.

Wendameen—Auxiliary Schooner.

A 67-Footer with the Speed of a Cruising Motor Yacht.

THE 51-foot waterline schooner Wendameen, shown in the accompanying plans, was designed by Mr. John G. Alden, of Boston, Mass., and built by the Adams Shipbuilding Co., of East Boothbay, Me., for Mr. Chester W. Bliss, of Springfield, Mass., to replace the 65-foot power boat formerly owned by him. Mr. Bliss required a boat which would have the speed of the ordinary cruising power boat that would be able to stay at sea in any weather, and which would give a good account of herself under sail in moderate to strong breezes.

Wendameen is designed on a very similar model to the most successful Gloucester fisherman with plenty of displacement and beam, hard bilges with about 60% of the ballast inside to insure a slow, easy motion. The construction is very heavy and with proper care the boat should last a lifetime. The auxiliary plant consists of a 65-75-h.p. Standard, installed aft in a large engine room. At 350 revolutions a speed of 10 knots was maintained under average weather conditions.

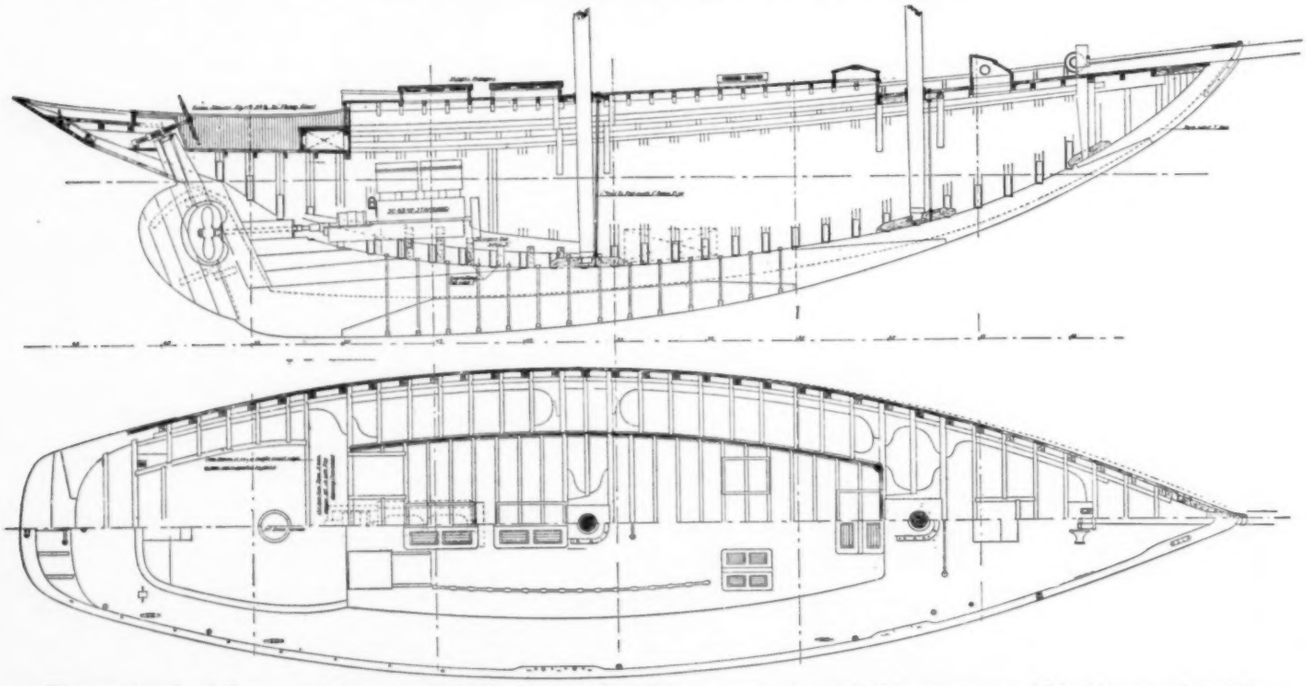
Her 65-75 Standard drives her at the rate of 10 knots.

The feature of the boat is her high bulwarks, which are a foot high throughout. Below decks there are two roomy staterooms, large main cabin, engine room, two guests' toilets, roomy galley, forecastle with full headroom and crew's toilet. Wendameen has already proved most satisfactory in every respect and several other boats of this type are now being contemplated on similar lines.

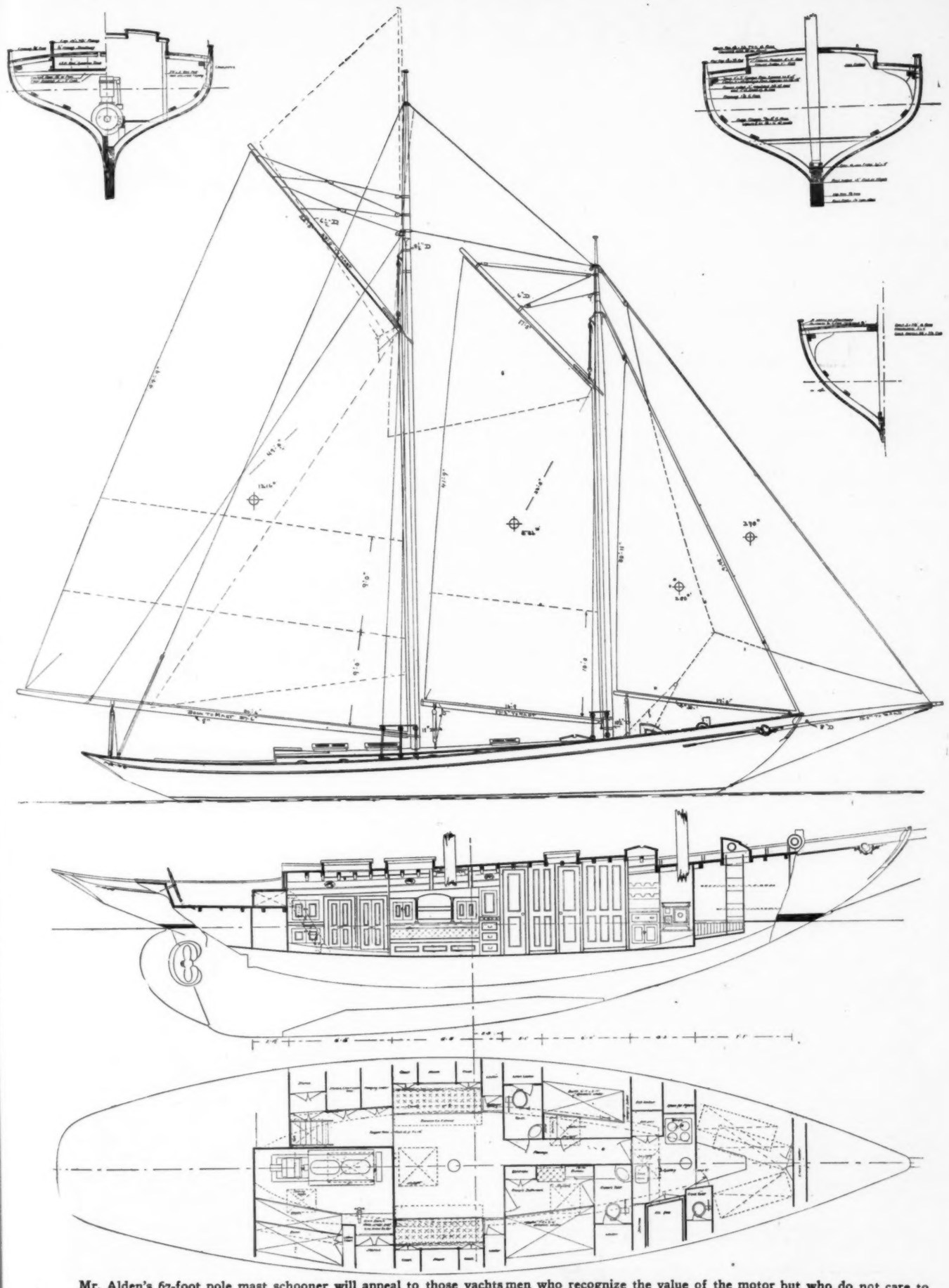
The principal dimensions are as follows: Length, o.a., 67′ 0″; length, w.l., 50′ 7″; breadth, 17′ 0″; draught, 8′ 9″.

Wendameen may be cited as an example of the auxiliary up-to-date. Few indeed are the sailing craft built these days without motor power for, practically, the motor detracts in no way from the behavior of the craft when under sail and it helps a whole lot when winds are light or unfavorable. All the modern fishing schooners are being built with auxiliary power and they are considered by many as the last word in the qualities of seaworthiness, beauty and all-around ability.

This boat should appeal to those yachtsmen who recognize the importance of the motor, but are unwilling to give up sails. Her design is all that the most critical could demand and her rig with its pole masts, as shown on the opposite page, is simplicity itself.



The construction is heavy and shows a proper distribution of members to meet the particular stresses to which this type of craft is subjected.



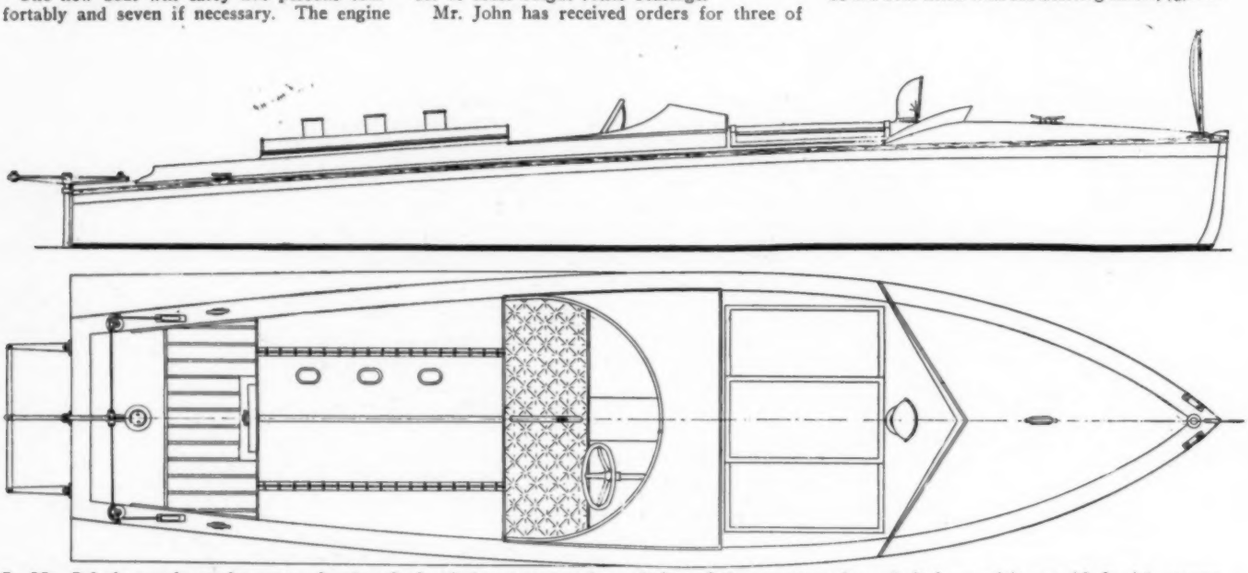
Mr. Alden's 67-foot pole mast schooner will appeal to those yachtsmen who recognize the value of the motor but who do not care to give up sails. The design is one that should be both fast and able.

A 20-Foot Hydroplane.

THE accompanying plans of the 20-foot hydroplane designed by Wm. Edgar John, Philadelphia, Pa., show a boat that is fast becoming popular for high-speed runabout service. The lines of this boat are similar to Delphia II whose rating is 74.7 and whose official time for one mile is 1' 62". This boat was designed by Mr. John last year.

The new boat will carry five persons comfortably and seven if necessary. The engine is located aft which is found to be the best practice in small racing boats and drives the propeller shaft through a gear box especially designed by Mr. John. The box is of cast aluminum and fitted with vanadium steel gears and shafts. Hess-Bright bearings are used throughout. The struts and intermediate bearings are polished bronze fitted with a special set of Hess-Bright roller bearings.

Mr. John has received orders for three of these boats. Two of these boats will each be fitted with a six-cylinder 4¾" bore by 5" stroke Frisbie motor and will have a guaranteed speed of 30 miles an hour. The other boat is fitted with a six-cylinder 5½" bore by 6" stroke Sterling motor with a guaranteed speed of 37 miles an hour. The contract price of the two boats with the Frisbie motors were $2,100 and of the boat fitted with the Sterling motor, $3,000.



In Mr. John's runabout the motor is placed aft of the steersman's cockpit and the passenger's cockpit forward is provided with covers for use when racing.

An Oil-Engined Cruiser.

A 68-Footer to Cruise to San Francisco via the Panama Canal.

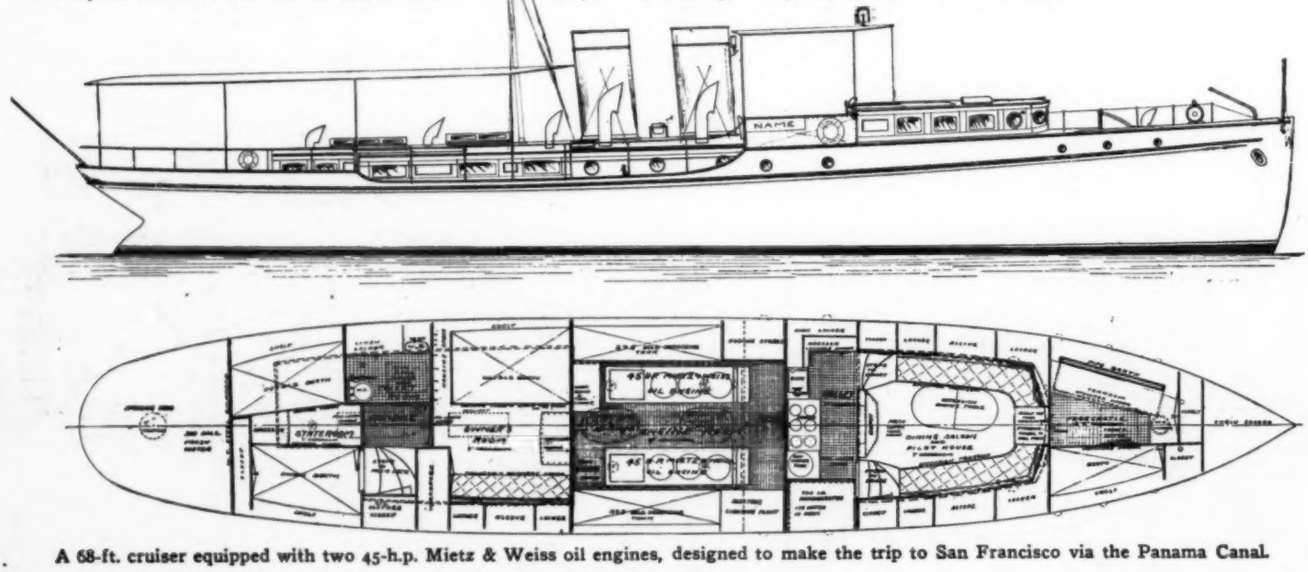
THIS design was prepared by Wm. J. Deed, Jr., naval architect, of Boston, Mass., for a western owner who is planning a trip to the opening of the Panama Canal and up the coast to San Francisco. Because of the greater fuel economy two 45-h.p. Mietz & Weiss oil engines are shown, and these will give the boat a sea speed of 12 knots. The tanks will hold 750 gallons, insuring enough for quite a run.

This boat is 68 ft. 3 in. on deck and 65 ft. 3 in. on the waterline, 12 ft. 2 in. beam and 4 ft. draft. The general ship-shape lines lend a capable air to the boat and the double-stack proposition gives both exhaust and excellent ventilation, besides adding to the trimness of the model.

By using steel bulkheads the boat is divided into five compartments, each one containing one complete element of the make-up of the boat, *i. e.*, crew, dining arrangements, power plant, staterooms and steering gear in the lazarette.

In the deckhouse is an auxiliary steering wheel under a removable shelf-top, for use in bad weather. There is a 7-foot. headroom throughout the boat.

There is an advantage in an oil engine craft of keeping the galley and crew out of the engine-room, as it is necessarily not as clean as when gasoline is used. Another point of value is the companionway opening forward instead of thwartship.



A 68-ft. cruiser equipped with two 45-h.p. Mietz & Weiss oil engines, designed to make the trip to San Francisco via the Panama Canal.

MARINE MOTORS

The Big New Buffalo

Two Heavy Duty Models Using Kerosene Fuel.

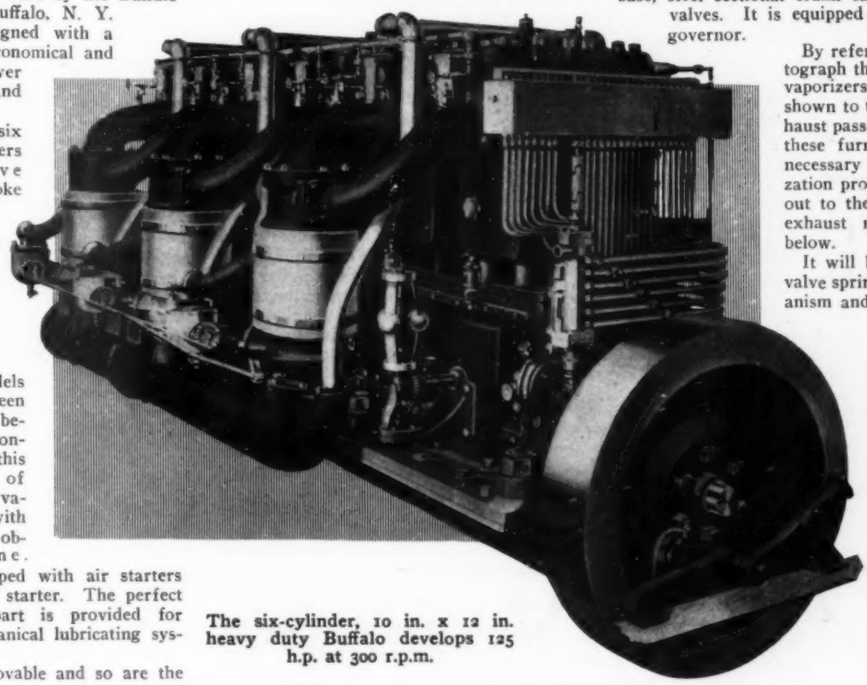
PROMINENT among the new engines brought out during the past year are two heavy duty engines with 10 inch bore and 12-inch stroke built by the Buffalo Gasolene Motor Co., Buffalo, N. Y. These engines are designed with a view to supplying an economical and absolutely reliable power plant for work boats and cruisers.

The two models have six cylinders and four cylinders respectively. Both have the same bore and stroke and a normal speed of 300 r.p.m. The six-cylinder machine has a nominal rating of 125 h.p., and the four-cylinder engine is rated at 85 h.p., although it really develops much higher power. Most of the engines of these models ordered so far, have been equipped with kerosene, because of the greater economy due to the use of this oil, which, with the aid of the "Buffalo" kerosene vaporizer can be used with the same good results obtained from gasoline. Both models are equipped with air starters and also an emergency starter. The perfect lubrication of every part is provided for through a special mechanical lubricating system.

The camshaft is removable and so are the cylinder heads. The valve lifting mechanism is enclosed. The exhaust manifold is carefully water jacketed. The engine has a steel base, steel sectional crank case and enclosed valves. It is equipped with adjustable governor.

By referring to the photograph the three kerosene vaporizers are clearly shown to the left. The exhaust passes down through these furnishing the heat necessary for the vaporization process and passing out to the water jacketed exhaust manifold shown below.

It will be seen that the valve springs, lifting mechanism and removable cam shaft are absolutely enclosed, but are accessible by easily removed covers. The air starter with its leads to each cylinder is shown just back of the fly wheel with the mechanical lubricator above it, feeding directly all of the working parts and bearings.

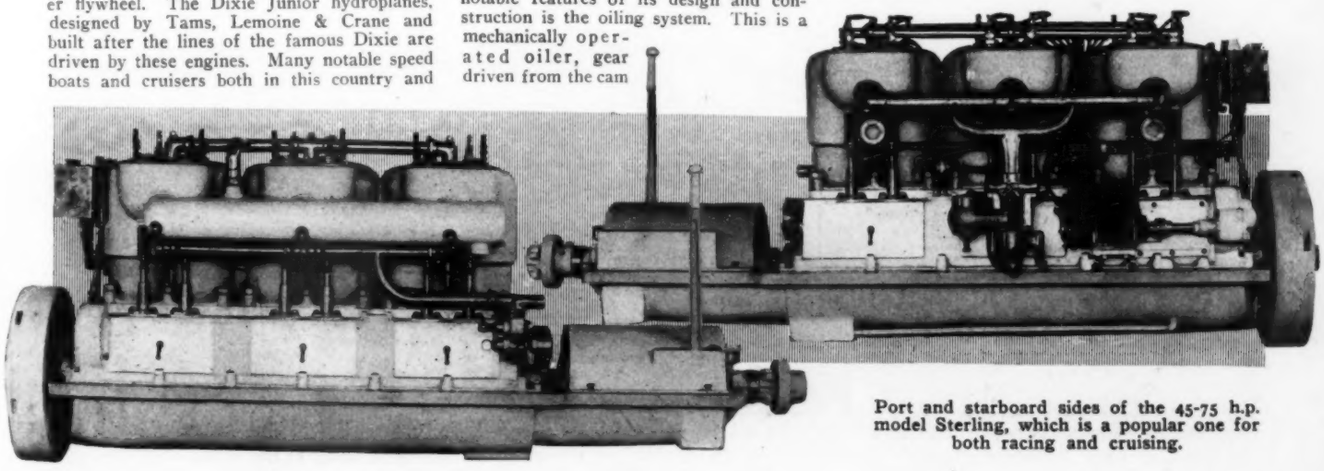


The six-cylinder, 10 in. x 12 in. heavy duty Buffalo develops 125 h.p. at 300 r.p.m.

The 45-75 H. P. Sterling.

The Medium Duty Model that Proved So Successful Last Season.

The engine illustrated below is the stock Model B Sterling designed for medium duty and speed work in cruisers, runabouts and racing boats. It has a bore of 5½ inches and a stroke of 6 inches. It develops its power at about 600 to 1000 r.p.m. and can be driven at higher speed if necessary. For cruising work and launches they are equipped with iron base and heavy flywheel, but for speed they are fitted with aluminum base and lighter flywheel. The Dixie Junior hydroplanes, designed by Tams, Lemoine & Crane and built after the lines of the famous Dixie are driven by these engines. Many notable speed boats and cruisers both in this country and abroad are powered with this model. Jane S., the 32-foot displacement boat owned by Charles S. Smiley of Clarksburg, W. Va., winner of the Southern Championship of 1912 is also driven by one of them. One of the notable features of its design and construction is the oiling system. This is a mechanically operated oiler, gear driven from the cam shaft, in connection with the Brush patent which insures positive and uniform lubrication to all working parts. The oil is pumped from the reservoir to the tubes leading to cylinders and cam shaft gears and from there flows to the base maintaining the necessary level of oil for the splash system that is used for the bearings in the base. The lower base is divided by partitions between each connecting rod, forming pockets.



Port and starboard sides of the 45-75 h.p. model Sterling, which is a popular one for both racing and cruising.

Racing Winter Through Dixie.

ing cover, on which was lashed our emergency mast and sprit, as well as anchor cable, and other paraphernalia. Somehow or other, the engine got stalled when things were at their liveliest; and, the batteries being weak, she refused to start again. As we were drifting rapidly toward a two-foot spot, an anchor was fished out of the mix-up with enough line to tie us to the bottom. Then the chief connected up a fresh set of batteries, the engine started, and half-carrying, half-towing the wreckage we made for the nearest harbor, some six miles distant. This happened to be the Great Wicomico River where the fish canning town of Reedville is located. We smelled it from afar, but it was a welcome aroma, for it suggested land.

Thanks to a kindly fortune, the next two days were complete opposites, weatherwise, from the three preceding days, and the Chesapeake was as calm as the lake in Central Park. We ran from Reedville to Milford Haven, in back of Gwynn's Island at the entrance to the Piankatank River. This port one can hear from as great a distance as he can smell Reedville, there being about three hundred motor boats hailing from this port, not one of which is equipped with a muffler. From Milford Haven the shortest way south is over a bar to the south of the island through a gap known locally as the "Hole in the Wall." We missed the hole and our customary daily grounding occurred here, but managed to get off under our own power (including the engine's, the skipper's and the chef's), and cleared the place — forever. A heavy haze obscured the land as soon as we were well out on our course, but we ran down the lighthouses with little trouble, and passed through the maze of oyster stakes that obstruct much of the Bay even for a distance of seven miles out.

(*Continued from page 5.*)

We reached Norfolk in mid-afternoon. Here the members of the Norfolk Boat Club gave us a cordial welcome and extended many courtesies to us, while the kindly old janitor emeritus, who has been with the club since its inception, burst several suspender buttons in an effort to tie our tender securely. It was the end of the first stage of our long cruise.

We stayed in port nearly a week. The wreckage was cleared up, and the awning repaired and incidentally raised four inches to permit us to stand up straight *somewhere* on board. Querida received a thorough housecleaning—a periodic necessity when cruising in a small boat so heavily loaded with equipment. And here we met some good friends hailing from New Bedford, and also bound for Florida with their trim little twenty-four-foot cat boat. An evening in their snug little cabin with an excellent supper cooked on their coal-burning Shipmate showed us at a glance the comforts of a sailboat for cruising, the much greater beam seeming to almost double the interior accommodations. We found our friends post-graduates in the college of cruising, even to salting their own fish, knitting their own sailor's scarfs, eating the genuine hardtack, rarely seen nowadays outside the fo'c's'les of whalers, and having for company a real live kitten.

We shall remember our evening aboard Mascot as one of the most pleasant incidents of our cruise.

From Norfolk two routes southward are open to the cruiser. There is the Albemarle and Chesapeake Canal route and the Dismal Swamp Drummond Canal route. Whichever way you choose you will wish you had taken the other. Small boats with a limited fuel capacity are perhaps better off if they take the Dismal Swamp route, as they can renew their supply at Elizabeth City, about fifty miles from Norfolk, while if they go the other way there is no chance to fill tanks on the direct route till Oriental is reached about fifteen miles from Beaufort. The distance from Norfolk to Beaufort is about 210 miles by either route, and the two ways unite at the entrance to Croatan Sound, after Albemarle Sound has been crossed.

We chose the Dismal route for the above reason, and because of the alluring tales of its poetic charm and mystic weirdness. Perhaps! But at any rate it was the most dismal place one wants to see.

The run down the upper Pasquetank River from the canal to Elizabeth City is one which we shall long remember because of its novelty and strangeness. We had found the canal desolation itself, but this stretch of eighteen miles was even lonelier. To begin with, the stream is extremely narrow, scarcely anywhere is it over 100 to 150 feet wide, while coming down to the water's edge on both sides are the densest forests. We made the run on Thanksgiving morning, in a howling northeast snow storm. The trees, which in places nearly meet overhead, were coated with snow; our decks were covered with it; it filled our eyes when we took a short turn to windward.

At "Lizzie City" Querida's crew donned erstwhile white collars, scraped blue chops with trembling fingers and repaired with all diligence to the leading hotel and its turkey dinner.

It's a lonely run from Norfolk to Beaufort. The sounds of North Carolina are given over largely to the oyster business and one sees but little shipping upon them. But it is an interesting stretch to the cruiser, and different from

(*Continued on page 60.*)

Viper V, the Sea Sled.

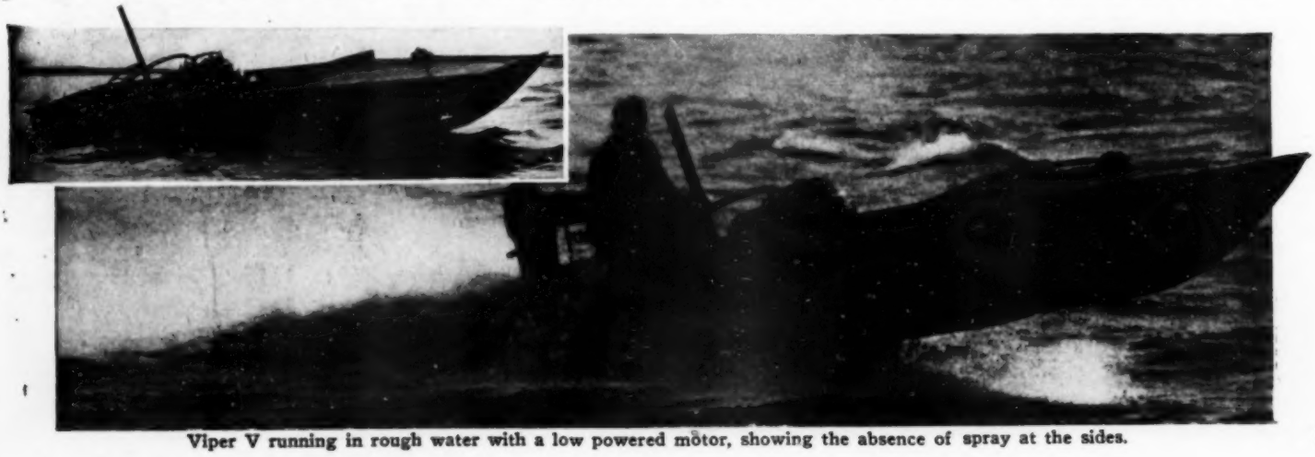
A Novel Hydroplane with Concave, V-Shaped Underbody and Surface Propellers.

EVERYONE has become more or less familiar with the word hydroplane and the term planing as describing the action when the stern as well as the bow rise out and enable the boat to slide along on the surface of the water and it seems to be the general belief that the attainment of planing is a simple matter and that the chief practical problem in the efficiency of a hydroplane lies in the reduction of the wetted surface and a consequent reduction of friction. This may be very true in boats of the highest powers and lightest weights, but is not in the least true of the general run of so-called hydroplanes, 45 pounds to the horsepower as the total weight of engine and hull being about the practical maximum limit of weight on which a hydroplane will plane well and develop good efficiency.

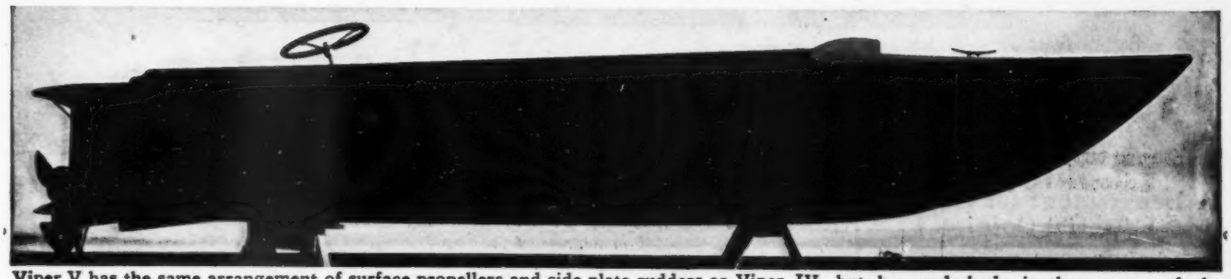
Another defect apparent in many hydroplanes, not only of the runabout, but in the racing types is the pounding of the boats in choppy water.

Mr. Albert Hickman, the inventor of the surface propeller and side plate rudders, which are well known to MoToR BoatinG readers, is responsible for the development of this latest type of hydroplane, which will plane absolutely at weights even greater than 70 pounds to the horsepower. This boat which is called the Sea Sled is the outcome of experiments which began with the fitting of air plates to the bottom of Viper II. The three main ideas in the design of Viper V, were to produce a boat that would plane readily and perfectly at comparatively heavy weights, to do away with pounding in ordinary choppy water and to attain as near to absolute safety and seaworthiness as is possible. Mr. Hickman has been particularly successful in his results.

The basic idea in the design of the hull of Viper V was to gather in the spray, the mixture of air and water that is thrown from under the bottom of a speed boat and to this end



Viper V running in rough water with a low powered motor, showing the absence of spray at the sides.



Viper V has the same arrangement of surface propellers and side plate rudders as Viper IV, but her underbody is the reverse of the typical V bottom.

her bottom was so worked out that each little ripple, as it went aft should act as an air compressor, forcing the trapped air under the boat so that she actually rides in part on compressed air. To accomplish this the bottom was made with inverted V sections something like a V-bottom boat turned wrong side out. The keel line is higher than the chine throughout, curving downward aft in a way that would be quite incorrect in a hydroplane of the regular type. The inverted V sections are deepest near the bow and the sides of the boat instead of being drawn in to meet at the stem, remain parallel, the V sections dying out rapidly as the stem is approached.

In Viper V, instead of the concave sections changing to convex sections forward, the inverted V's become increasingly deep towards the bow until they are swept up clear of the waterline altogether, the boat running forward on two sharp edges like sharpened sled runners.

In addition Viper V has all the advantages of the surface propeller for speed such as engine requiring a minimum length of hull, no shaft, strut, etc. under water, cavitation impossible, absolutely balanced helm and propellers accessible and replaceable from the boat while afloat. Added to these are the advantages of being able to travel through heavy weed growths without the speed being effected.

In the trials of Viper V with a 20 h.p. 4¼" x 4¼" ordinary stock motor weighing 400 lbs., and with weight of boat and engine complete with crew of 1770 lbs., or 88 lbs. to the horsepower and the propellers turning at 1250 r.p.m. attained the speed of a little better than 25 miles an hour.

Here then we find a little boat not of light construction, but of ordinary weight and strength with an engine installed that is not a sensitive and expensive high speed hydroplane engine weighing 5 to 10 lbs. to the horsepower, but an ordinary stock runabout engine turning at revolutions that can be maintained without damage and weighing 16 to 20 lbs. to the horsepower. We have been informed by the Viper Co., of Pictou, N. S., that one of these Viper hydroplanes will be on exhibition at the New York Motor Boat Show in February.

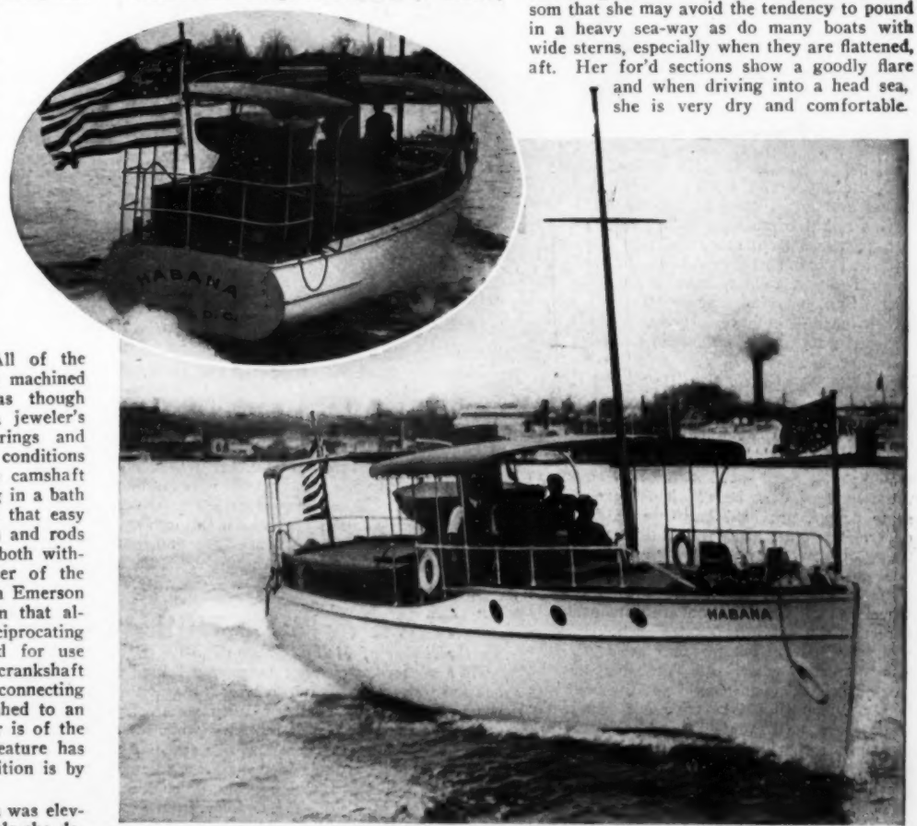
Habana, a Bridge Deck 46-Footer.

Designed by F. Y. Dawson and Powered with a 50 H. P. Emerson Engine.

THE Emerson Engine Company, of Alexandria, Virginia, has just completed the installation of one of their four cycle 50 horsepower cruiser engines in the new cruiser Habana, recently turned out from the boards of F. Y. Dawson. The boat is the property of Judge Luke C. Strider, of the Municipal Court of the District of Columbia, who is to use her in pleasure trips on the Potomac and Chesapeake Bay, with an occasional trip outside the Capes. The Judge has long been identified with the best of power craft in and around Washington and in this new cruiser has embraced some original ideas that make for comfort of himself and his guests. The engine is built on the Emerson plan of enbloc cylinders to avoid the use of packing joints in the working chambers and to prevent the wearing of cylinders under work. The motor is finished right up to the limit of marine practice and is enameled a robin's-egg blue, which has been the Emerson color for years. All of the exposed members are finished and machined all over and the motor looks as though it had just been turned out by a jeweler's shop. It has special thrust bearings and a specially designed bed to fit the conditions as met with in the Habana. The camshaft is actuated by a spiral gear, running in a bath of oil and this gear is placed high that easy access can be gained to the pistons and rods with a chance to remove either or both without taking down any other member of the motor. The frame is the regulation Emerson type of open rod steel construction that allows a perfect cooling of the reciprocating parts, splash plates being provided for use when the motor is running. The crankshaft is of nickel chrome steel as are the connecting rods, which are machined and finished to an "I" beam section. The reverse gear is of the Paragon type and a self-starting feature has been added to the motor. The ignition is by both battery and magneto.

The contract speed of the Habana was eleven miles an hour, but upon her trials she developed a speed of 13.9 m.p.h. over a course specially laid out by her owner on the sea wall at Washington.

Habana is a bridge-deck cruiser 46' L.O.A., 10' 2" beam and was built by the Dawson Boat Company. She accommodates four people beside her owner, with privacy for each, and as the Judge is to be his own engineer, the motor is placed in an engine room large enough to enable him to get at it without difficulty. The Habana has considerable dead-rise, this being carried clear aft to her curved transom that she may avoid the tendency to pound in a heavy sea-way as do many boats with wide sterns, especially when they are flattened, aft. Her for'd sections show a goodly flare and when driving into a head sea, she is very dry and comfortable.



Two views of the 46 ft. bridge deck cruiser, Habana, powered with a 50 h.p. four-cycle Emerson engine.

From Motor Boating Readers

A Department for the Exchange of Ideas and the Discussion of Questions of General Interest. Editorial Opinion on a Number of Questions Submitted by Readers of the Magazine.

MoToR BoatinG's columns are open to its readers, not only for asking questions, but for placing before other readers ideas, results of experience, opinions, etc., that should be interesting or helpful to them; but the editor will not, of course, be responsible for any opinions expressed or statements made in such communications. The name and address of the writer must necessarily be given in every case to make an answer by mail possible (no anonymous contributions will be considered for publication), but names will be omitted in publishing the letters and answers where desired, in which case it is desirable that initials or other distinguishing signature be appended. Through this department readers of the magazine may be of direct aid to one another in solving the problems of motor boating.

One Cause of Engine Trouble.

To the Editor of MoToR BoatinG, *Sir:*—

Having received a number of useful hints and valuable information from MoToR BoatinG it has occurred to me that perhaps a little experience of mine last summer might help some other motor boat man.

My engine started as usual, but the opening of the throttle and advancing the spark did not increase the speed. There was a queer noise that I was unfamiliar with, and at first could not locate. I tested the spark plugs, adjustments of the coils, and carbureter, tried out a new set of batteries, all without in any way improving the speed. In the meantime it was getting later and later and I was no nearer a solution of my problem. I did not dare take my trip with the engine working in that manner and was about to abandon it when the peculiar sucking sound again forced itself on my attention. That gave me an idea. I put my finger into the air opening of the carbureter and found that the spring controlling the automatic feature of the air valve had caught. After that I had no further trouble.

E. L. W., Marblehead, Mass.

Engine or Wheel, Which?

To the Editor of MoToR BoatinG, *Sir:*—

Will you kindly advise me what propeller to use on my 30′ x 8⅓ x 2½ o.a. 28½′ x 7′ 3″ x 2½ w.l. raised deck medium weight construction, Georgia pine planking, fine lines, moderate deadrise, round bottom, Hand design, V stern cruising boat. Last year I used a 15-h.p. 2-cylinder 2-cycle motor, 5½ x 5½ and wheel 24″ x 26″ x 5¼ width blades, 3 blades and got 9 miles at 500 r.p.m. I now have a 15-h.p. of another make 2-cycle 2-cylinder 5 9/16 x 6 propeller 24″ x 32″ x about 7″ wide and get but 7 miles at normal r.p.m.—425, think I ought to get more speed than last year. Can you kindly advise me as I would like to change at once. Would not a wheel with 24″ x 26″ and wider blades than one used last year be suitable?

C. W. G., Providence, R. I.

[We believe that the results you obtained last year were remarkably good, showing only 21% propeller slip. Nine miles per hour is also very good, but we should expect you would get as good speed with a new engine as the two appear to be of almost exactly the same power, provided both are in first-class order. There are many things that would tend to reduce the power of the new engine, but you no doubt have made sure that none of these exist. We are inclined to advise a wheel 25″ x 28″ and if you are not absolutely sure that the figure of 9 miles an hour is correct, you had better try one 25″ x 30″. As this diameter wheel will probably not be carried in stock, you should get the next size larger, which should be tried out and if the results are not satisfactory, by cutting off the tips of the blades a little, being sure to take a like amount off of each to preserve the balance, we believe that you will be able to obtain considerably better results than you are now getting. The blades should be, as you suggest, about 6 inches wide.—Ed.]

Plans of a Hydroplane.

To the Editor of MoToR BoatinG, *Sir:*

I would be obliged if you would let me have the name of any person from whom I could obtain plans of a 16′ or 18′ hydroplane.

A. S. McC., New Westminster, B. C.

[We do not believe that stock designs of a a 16′ or 18′ hydroplane can be had from any dealer. The art of designing hydroplanes is changing so rapidly just at present that a design made a few months ago would be practically worthless now, inasmuch as so many new features have recently been worked in and so much additional data obtained from the season just past. We would advise you to communicate with any naval architect, many of whom advertise in MoToR BoatinG for such a design, and we are sure you will be able to obtain much greater satisfaction than from any stock design, and their fees are remarkably small.]

MoToR BoatinG as one of the crew.

A Congenial Crew.

To the Editor of MoToR BoatinG, *Sir:*—

The enclosed picture I am sending you as I thought it might interest you. It was taken upon the shore of the Sound, near Indian Neck, Conn. Note how clearly the cover front shows up in the photo. All through my vacation MoToR BoatinG was my constant companion. Wishing you continued success, I am,

H. W. E., New York City.

Wood or Steel Hull.

To the Editor of MoToR BoatinG, *Sir:*—

As a subscriber to your magazine, I kindly ask the following: Kindly advise me which is the best kind of a boat for fresh water. A steel hull or a white pine hull, and which one is the best. I have a boat for sale and party looking at same is undecided or doesn't know which is the best. I will not say which kind my boat is, but would like to hear from you as what you think or know about same.

J. H. H., Cincinnati, O.

[We believe that this is a question upon which no authorities will agree, as in our mind there is no such thing as a best choice between the two types of construction. If designed and built properly either or both are excellent and the converse is also true. There are advocates of the steel boat that claim they would not sail in a wooden hull and we know of boats of the latter type of construction over 30 years old that are still doing business. Yet while we have no record of anything as old as that in a steel hull, we do not doubt but with the proper care one would continue to do service for that length of time. The material out of which the hull is constructed should not be the convincing point to lay before your prospective purchaser, as there are a thousand and one other things, so to speak, which should throw the balance one way or the other and no matter which type of hull yours is, provided it is well constructed, has been well taken care of and that the power plant is also of the best order, no one should be afraid of getting a first-class outfit.]

Automobile Engine for Marine Use.

To the Editor of MoToR BoatinG, *Sir:*—

Kindly let me know if an automobile engine that is rated at 20 h.p. is equal to a marine engine that is rated at 20 h.p. In other words, would an automobile engine of 20 h.p. give as good a result if put into a boat as a 20 h.p. marine engine into the same boat, all other conditions being equal, both engines in good condition and both being either two or four-cycle engines.

E. O. D., New York City.

[We would say most decidedly "no." An automobile engine in more ways than one is not designed for the severe service which in marine work an engine is subjected to. On the other hand, if you have a racing hull of very light construction with the proper propeller and by placing the engine in the proper position in the boat, we believe that without doubt your automobile engine will give good satisfaction. If you have your choice in purchasing one of the two engines, we would say by all means choose the marine one, unless you believe your boat is especially suited for the other and as you have given us no data regarding this, we are not able to even offer a suggestion.]

Two Versus Four Cycle.

To the Editor of MoToR BoatinG, *Sir:*—

Will you please answer the following question: Will two-cycle three-port engine wear as well as four-cycle? Is there any difference in gasoline consumption in the two? I will be much obliged for the answers.

H. M. C., Boca Ratonas, Fla.

[As regards reliability, it all depends upon the engine itself, its design, construction and care. A good engine of either type is very reliable. Of the smaller powers, say one, two and three-cylinder engines, the two-cycle engine is more popular than the four, but if larger power and a greater number of cylinders, the four-cycle is probably preferable to the two and has many points in its favor.

There are, of course, very satisfactory four-cycle engines made of less than four cylinders, which we know have proven very reliable, while on the other hand a two-cycle engine of four or more cylinders is not the exception. As regards the relative gasoline consumption in the two, the four-cycle is the more economical. In a two-cycle type the rate of fuel consumption is about 1½ pints per horsepower hour on the average, while in the four-cycle engine this is reduced to about 1 pint per horsepower hour, in commercial practice.]

The Value of Clearance Space.

To the Editor of MoToR BoatinG, *Sir:*—

Please send me a formula for finding the compression in the cylinder of a two-cycle gasoline engine. Supposing the cylinder to be 2" bore, 3" stroke, with 1" between the cylinder head and piston on top center, how many pounds to square inch is in the cylinder on top stroke or just before the spark takes place? What I am after is to find how much I have to compress the charge to get a pressure of 300 pounds to square inch. I am figuring up something new. Suppose we have 1" between the piston and cylinder head or ½" space. What will be the pressure and how is it found? C. H. P., Larchmont, N. Y.

[A satisfactory formular for estimating the clearance space at the top of your piston to obtain a given compression pressure in your two-cycle engine is hard to give, as there are so many variable quantities that play an important part. One good formula is as follows:

$$(A)\quad \text{Clearance Volume} = \frac{\text{Bore} \times \text{Stroke}}{1-\left(\frac{14.7}{P_c+14.7}\right)^{1.35}} - (\text{Bore} \times \text{Stroke})$$

A formula for computing the compression pressure may vary considerably; for example, if the engine is turned over slowly by hand and there is no leakage past the piston rings, then the pressure might be computed from the first law of gases; that is, the product of the pressure multiplied by the volume is a constant, providing the temperature is unchanged, or in other words, pressure at the beginning of the stroke multiplied by the volume above the cylinder at the same time is equal to compression pressure at the end of the stroke multiplied by the volume above the piston at that time. Computing the original volume of the entire cylinder above the piston when same is at the bottom of the stroke and multiplying this by the absolute pressure within the cylinder at this time (which is about 13 pounds absolute), you obtain a product that is a constant during the entire stroke, and from this, if the volume of the compression chamber is known, the new pressure can be easily computed. However, in actual practice things are not so simple, for no such thing exists as the absence of leakage by the piston rings, which naturally reduces the pressure, and as the revolutions are increased heat is generated, because work is done in compressing the gases which greatly increases compression pressure. Part of the heat is carried off by the jacket water and then more is added by the burning of the charge, so you will see the result becomes very complex. The proportion of gas and air in the mixture and the heat value of a cubic foot of the fuel also play an important part.

An approximate value of the compression pressure may be found from the following formula.

$$P_c = 13\left(\frac{V+V_1}{V_1}\right)^{1.35} - 15$$

P_c equals compression pressure.
V equals bore × stroke.
V_1 equals clearance volume.

The following table gives approximate values of the compression pressures for the different clearances.

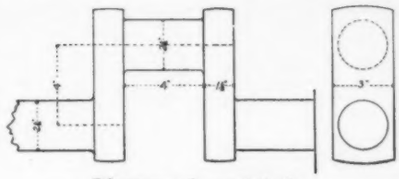


Diagram of crankshaft.

Bore × Stroke / Clearance.	Approximate Compression Pressure.
2	42 lbs.
2.5	55 "
3	69 "
3.5	88 "
4	99 "

In your case, with a 2-inch bore by a 3-inch stroke and a 1-inch clearance space, provided the latter is of the same bore as the rest of the cylinder, you should get a compression pressure of about 69 pounds per square inch from the above table. If you desire to find what clearance space you must have to obtain a compression of 300 pounds per square inch; by substituting in formula (A), we find it will be necessary to have .27 of an inch clearance to obtain this pressure.

Of course, you realize that such a compression is far above the upper limit for gasoline vapor, 85 pounds per square inch being about the limit and 60 to 70 pounds a good working figure. For gases of lower calorific value, this can be increased.

The compression in an engine has a direct relation to the power developed, as the pressure after the explosion has taken place is roughly 4 times the compression pressure, and naturally the more we have of this, the better off we are. However, great heat is developed by this compression which if carried beyond a certain figure, becomes very detrimental. There is a tendency to pre-ignite the mixture by this heat before the proper time comes and the leakage past the piston rings and through the valves becomes excessive. The heat of the explosion is also greater, which plays havoc with the oiling system and requires a greater cooling system.

Dimensions of Engine Parts.

To the Editor of MoToR BoatinG, *Sir:*

As I have been a reader of your magazine for some time, I take the liberty of asking you a few questions in regard to an engine I intend to build. What thickness should I make the cylinder wall for a 6" x 8", four-cycle engine, which should make 500 r.p.m.? I have figured the value openings at 1½" for this speed, is this correct? What should be the weight of the flywheel? Is the crank shaft sketched opposite correct?

O. P. B., Baltimore, Md.

[The thickness of the cylinder walls may be computed from the following formula, assuming a tensile strength of 20,000 pounds per square inch for the casting and a factor of safety of six:

$$\text{Thickness} = \frac{\sqrt{D}}{5} + \left(\frac{\sqrt{D}}{5} \times \frac{\text{compression pressure}}{250}\right)$$

Where D equals the diameter of the cylinder in inches. In your case, with a compression pressure of 60 pounds per square inch this would give a thickness of .61 inch. This should be increased slightly to allow for any variation in the thickness of the casting. The diameter of the inlet valve should be about as follows:

$$\text{Diameter} = \frac{\sqrt{D} \times S' \times \text{R.P.M.}}{600}$$

Where S' equals the stroke in feet. In your case this gives an opening of 1.37 or 1⅜ inches. The exhaust opening should be 1.2 times that of the inlet valve or about 1⅝ inches. The diameter of the crank shaft may be found from the following formula:

$$\text{Diameter} = \sqrt[3]{\left(\frac{D \times \text{Compression pressure}}{100}\right)^2}$$

which in your case works out about 2⅜ inches.

The length of the end main bearings varies considerably in practice, but if they are made of a length equal to twice the crank shaft diameter, you will be working well inside of the safe limit. The intermediate bearing might be somewhat shorter with safety. The diameter of the crank pin should be about 1.15 times the diameter of the crank shaft or about 2½ inches in your engine with the width of the crank arm 1.15 times the diameter of the crank pin or 2⅞ inches. The thickness of the crank arm may be made .7 times diameter of crank pin or about 1¾ inches. The length of the crank pin need not be made quite as long as you have planned it, 1 1-3 times the crank pin diameter being generally sufficient. The weight and diameter of the flywheel are points on which there is much difference of opinion and a more or less complex problem. A two-cylinder engine generally requires more flywheel than a 3 or 4 cylinder engine does and also a slow speed one more than a high speed engine. We believe that one about 20 inches in diameter and weighing about 150 or 200 pounds should meet your requirements.]

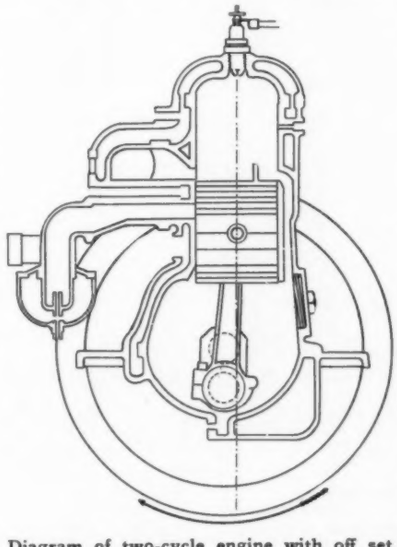


Diagram of two-cycle engine with off set cylinder.

Advantages of Offset Cylinder.

To the Editor of MoToR BoatinG, *Sir:*

Will you kindly explain what is meant by an offset cylinder and what its advantages are?

E. T. G., Buffalo, N. Y.

[An offset cylinder is one in which the center line of the cylinder does not pass through the center of the crank shaft. This offset allows the piston to exert a more direct thrust upon the crank pin and one which is exerted through more than one-half of a revolution. This, of course, shortens the up-stroke and makes the crank effort more nearly continuous. The piston moves more slowly at the lower end of the stroke, allowing more time for exhausting the burned gases and perhaps a purer fresh charge. There is also less side pressure of the piston against the cylinder walls. Obviously this type of engine will run in only one direction to advantage.]

New Things for Motor Boatmen

Refinements in Aplco Line.

The Apple Electric Company of Dayton, Ohio, have replaced their former 5 ampere plain bearing dynamo known as the Model B 1 with a new ball bearing machine known as the B 1½. This machine is greatly improved in many respects, having a capacity of 10 amperes instead of 5 and the price of the outfit is only slightly increased by the improvements added. The Model B 2 will also be equipped with ball bearings hereafter without additional cost. Besides the refinements in the dynamos, many improvements have been made in the switchboard. A new type of automatic cut-out has been adopted which is very positive in its action, a separate volt-meter and ammeter are now used instead of the former volt-ammeter and an improved hand rheostat has been added to the No. 3 board. The above features with the new type of knife switch adopted add greatly to the appearance and efficiency of the switchboard.

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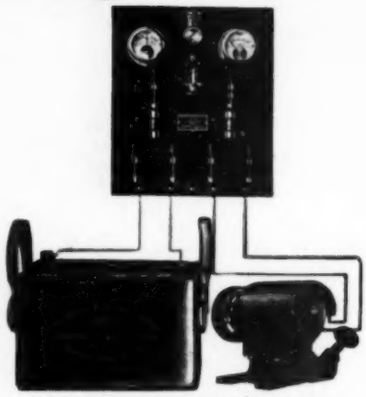
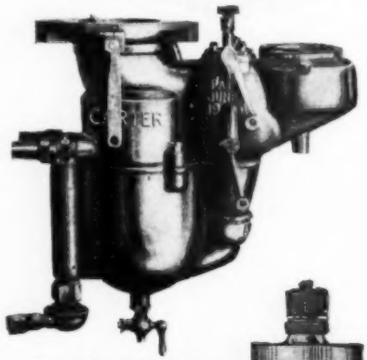


The new Aplco lighting outfit.

The Carter Carbureter.

Model C, which is the latest type of this instrument, is made by the Carter Carbureter Company, 912 N. Market Street, St. Louis, Missouri, and is especially adapted to 6-cylinder motors. The view shown illustrates this type which is provided with a vertical multiple jet fuel tube, which is located in the funnel and which accounts for the efficient operation of the device. For easy starting, the carbureter is provided with a small lever at the side which may be connected to a point within reach of the operator so that by pulling forward a rod the air openings are restricted so as to prime the carbureter automatically when desired. The bulkhead control parts consist of three pieces—a quadrant, a guide and a bell crank, and are supplied by the manufacturers at a cost of $2.50. The price of the carbureter in 1½ inch size is $30.00 and the weight is 4 pounds; in 1¾-inch size the price is $35.00, and the weight is 5½ pounds; and in 2-inch size the price is $45.00 and the weight is 7½ pounds.

* * *



The Model C Carter carbureter.

Latest Thermos Carafe.

The American Thermos Bottle Co. has recently placed on the market a new style of Thermos Carafe with a swivel holder which can be screwed to the top of a table or to the side of a wall. This is of particular interest to yachtsmen as it enables them to make the Carafe a permanent part of their boats' equipment. The Carafe is also provided with a padlock to permit the removal of the Carafe when it is considered desirable. The value of Thermos to the yachting fraternity is so well established that it need hardly be dwelt upon. Every man who operates a motor boat or sailing craft knows how difficult it is to prevent drinking water from becoming warm and insipid during the summer months. With Thermos aboard, iced drinks can be kept cold and refreshing for days at a time without carrying ice. When sailing in cold weather, there is nothing like a cup of hot coffee, tea or cocoa for taking the chill out of one's system. Thermos provides the means of having a piping hot drink any time anywhere, without fire.

* * *

The McCormick power plug.

The latest Thermos carafe for boat use.

Triplex Gas Mixer.

Another type of fuel mixer has been brought out by the Bremer-Wilson Mfg. Co., 1256 Michigan Avenue, Chicago, Illinois, which is known as the Triplex and which is designed to be placed between the carbureter and the intake manifold. It consists, as the illustration shows, of a screen of fine wire which serves to mix thoroughly the particles of gasoline with the air as they leave the carbureter and to increase the efficiency of the explosive mixture by this means. This device also eliminates back-firing inasmuch as any flame is cut off by the screen before it reaches the carbureter itself. Starting is also made easier by this device since a dry vapor is given to the cylinders rather than a heavy mixture containing a considerable portion of unvaporized gasoline. The price of this device ranges from $3.50 for the 1-inch size to $6.00 for the 2½-inch size and it is sold with a money refunding agreement in case it fails to serve its purpose.

* * *

Method of attaching the Triplex mixer

The McCormick Power Plug.

An ignition device distinctly new in design and operation and known as the McCormick Power Plug is receiving considerable attention from those who have examined and tried it. This Power Plug takes the place of the regular spark plug and the manufacturers claim that its use results in obtaining the maximum power of a motor at the minimum of fuel consumption and the maintenance of both throughout the life of the machine. The noticeable feature, other than the substantial construction, is the use of a unit electrical device with large and novel spark terminals. A large number of intensified high-frequency sparks constantly moving around the terminals are produced. These sparks take place within a sparking chamber, having a single restrictive opening. During compression gas is segregated in this chamber and exploded therein. A flame of burning gas is projected through the single opening from the spark chamber instantaneously and effectually exploding the mixture in the cylinder within surprisingly wide limits of quality and compression. The position of the terminals and the firing process prevents sooting, over-lubrication, and other spark plug troubles. The liberal design and the fact that the sparks are constantly changing position overcome the gradual burning of the terminals—a well known source of mis-firing and loss of power. In order to obtain the best results in the use of the McCormick Power Plug, it is necessary to throttle the carbureter. This forces the operator to use less fuel. A motor equipped with these Power Plugs with a perfectly adjusted carbureter responds quickly and easily to any demands made upon it, making possible easier starting and rapid acceleration. The McCormick Mfg. Co., of Dayton, O., who makes these Power Plugs say that their price of Two Dollars net buys considerably more than a mere firing device, in the extra power, reduced consumption, low maintenance and other features that compose their claims.

* * *

The Stalit Plug.

A new type of plug designed particularly for adverse weather conditions and which is known as the Stalit heating plug, is being sold by George Staats & Company, 252 Lorimer Street, Brooklyn, N. Y. The plug is so constructed that by turning the switch a minute or so before starting the motor in cold weather, the air in the intake pipe is heated so that the gasoline is more readily vaporized and the motor can be started upon one turn of the crank. To attach the plug, it is only necessary to bore and tap a hole for a quarter-inch pipe in any convenient place upon the inlet manifold, screw in the plug and connect the plug with the batteries according to a sketch supplied. The throttle can then be closed and the switch turned on for half a minute or so, after which the throttle may be opened and the motor started. After the motor is running, the switch may be turned off. The plugs are made for a 6-volt circuit and cost $2.25 each.

A New Seat Cushion.

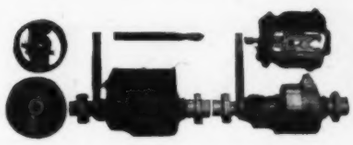
The R. L. Kenyon Company, of Waukesha, Wis., have just added to their line, what is known as the Double Canoe Seat Cushion. This is in addition to their made to order cushions and Life Preserver Pillows. This cushion is especially suitable for canoes, row boats and small motor boats, having a regular seat and a back rest. The seat is 14 x 14" and the back rest is 14 x 20". In addition to its being very comfortable, it is also a life preserver, so that canoeists need have no hesitancy in going out in their canoes because of the lack of having life preservers of some kind. The filling in this cushion is prime Java Kapok, very soft and resilient, and will not mat down. Buttons are fastened by wire holding process, using the Monel Metal wire, and guaranteed not to come out during the life of the cushions. All cushions are sewn with water-proof thread, and have a cord welted edge. These canoe cushions are being carried by the best sporting goods dealers throughout the country.

* * *

A New Spark Plug Case.

A. R. Mosler & Co., Mt. Vernon, N. Y., are giving away a handsome genuine leather Spit Fire spark plug case holding six Mosler platinum pointed Spit Fire plugs in their individual cartons. The case is made of a fine quality of durable leather finished in black, with as much care as a high priced pocketbook. The sliding holding strap is so arranged that the plugs can be kept in their original packages, or is adjustable to hold the plugs unboxed if desired. This case affords the proper protection for extra spark plugs and keeps the plug clean, prevents rusting and protects the sparking points which are so easily put out of adjustment. The double flaps fasten with solid ball and socket snap buttons. This case is being given free of charge with every order for six platinum pointed Spit Fire plugs, six ½" metric or ⅞-18 platinum-pointed Spit Fire plugs, at the regular price of $1.25 each for the ½" or metric and $1.50 for the ⅞-18 plugs. This offer is designed to extend throughout the holiday season.

The Spit Fire construction combined with platinum points assures energetic ignition and greater power from your motor.



Michigan reverse gears of the multiple disc and expanding ring types.

The Amper auto lock.

The Kenyon double canoe cushion.

A. R. Mosler's leather spark plug case.

New Michigan Gears.

The Michigan Wheel Company, Grand Rapids, Michigan, are making at present four types of planetary reverse gears, all having one speed ahead, neutral and one reverse with two types provided with an improved expansion ring clutch and two with a clutch of the multiple disc type. The improved features of these gears include an increased friction area on the reverse band and clutch and an increased wearing surface on the drum, pinions and bearings. The expansion ring clutch has a ten-to-one leverage with round head adjustment screws and a ground reverse band and clutch. The multiple disc type has 12 steel saw-blades alternating with bronze and floating in oil. The upper cases of both types are removable and everything is accessible for adjustment of all working parts. The gear shaft extends through the entire length and a compound leverage is provided with a fulcrum above the center line. All of these gears are provided complete with couplings ready to install. Model I, which is of the expansion ring type, ranges in price from $27.00 to $111.00 with an aluminum case and from $22.50 to $96.00 with a grey iron case; Model J, of the expansion ring type, which is open instead of enclosed as is Model I, costs from $17.50 to $90.00 according to size, although two special sizes are made at a higher price; Model G, which is of the enclosed multiple disc type, costs from $36.00 to $123.00 with an aluminum case and from $30.00 to $108.00 with a grey iron case; Model H, of the multiple disc open type costs from $24.00 to $99.00.

* * *

The Amper Auto Lock.

This lock is designed to lock the ignition system and is made by the Amper Electric Company, Lockport, N. Y. It can be used wherever it is desired to control a switch by a locking device and it operates similar to a safe lock, except that the clicks are counted instead of the numbers, so that the lock can be operated in the dark. The switch lever is automatically locked in position when the current is switched off, or it can be locked in position when the current is on. There is no opportunity offered for unauthorized persons to unscrew the lock or operate the switch, and it can be attached to any part of the boat desired. The case can be removed by the same combination that locks the switch if a start is made at the star shown instead of at the oval. The price is $10.

To Nova Scotia in a 21-Miler.

(*Continued from page 16*)

We ran into Rockport, making a good harbor inside of one of the breakwaters. Here we had some supper, and canvased-in the cockpit, for it was raining hard. I saw them hoist a big swordfish from one of the schooners lying to the wharf a few hundred feet away, and donned my oilskin coat to go in and see the "execution." Tying the tender to the stays of the schooner, I met some of the crew, who invited me down into their cabin for a cup of hot tea and a "gam." They were much interested in our trip and boat, particularly when we made the discovery that it was their smack that we hailed 20 miles from Cape Anne on our way up. They told me I ought to go around to Gloucester for better accommodations, as it looked to them as though we would be held up a couple of days by the storm.

They told us of a way of getting there without going around Cape Anne, saying that Cape Anne was really on an island, the Squam River separating it from the mainland and making it possible to proceed eastward a few miles from Rockport, enter this river, and sail through it to Gloucester. Upon their assurance that they had been through "20 times and could go through in the pitch dark," I told them I thought we would try it. Taking three of them aboard, including the captain, we hit it up at a fast clip for the entrance to the river, reaching there just as it was beginning to get dark.

It was raining hard and blowing. As we ran up the river, I judged from the actions of our "pilot" that he really did not know the channel so well as he had led us to believe, accordingly I reduced speed from 15 to 6 miles. I thought once or twice I felt the propeller churn mud. Sure enough, about half way through, they put us good and hard on the mud. It was pitch dark now, and while one of them went out in the tender to find the channel, we managed to kedge into deep water.

We decided to take the trolley from there over to Gloucester and secure hotel accommodations, and return the next day for the boat.

Labor Day was overcast, but it did not rain. We saw all the parades in Gloucester, and after one o'clock, George and I rode over on the trolley, and brought the boat through to Gloucester Harbor.

Tuesday morning, the weather being fair, we left Gloucester joyfully (we say joyfully, for the girls did not like the town or the fishy smell at low tide), and set a course south-by-east for Cape Cod. On this run over to the Cape, one is out of sight of land a long time, and we passed through the largest swells we had on the entire trip, being, I should say, three or four hundred feet apart, and probably twelve feet high.

We made a perfect landfall for Highland light, our log checking up within a knot of the distance we had determined on the chart when the lighthouse should be abeam. Here we sighted the smoke of what we believed to be an ocean-going tug, probably fifteen miles away. Her course lay the same as ours, and by four o'clock we were alongside, much to the curiosity of the crew to see two men and two women in a small boat shoot up to them at a 15 mile gait, for we opened up a bit when we got close. I decided to keep abreast of them around through the shoals of Nantucket Sound, until we were off Cottage City, as it enabled George and me to take life easy and not bother with our courses around this bad ground. When entering Nantucket Sound, the captain of the tug hailed us through his megaphone and told us to watch out for the masts of a vessel sunk there within a week. Sure enough, showing the accuracy of his course, we passed within two hundred feet of these masts, about 20 feet out of water, and discernible in the moonlight.

The harbor at Cottage City looked good to me at 1:40 a. m., as we dropped the anchor, and I promptly retired to the engine compartment again.

Getting a good breakfast, we took on gasoline and started down the Vineyard at 8:00 o'clock, the day being smooth and somewhat hazy.

Passing close to Vineyard Sound Lightship, we headed for Point Judith, and from there for the Race, the entrance into Long Island Sound, and passed through at 7 p. m. Here fog came on, and we ran very slowly by compass-course for Horton Point.

Here we anchored at 1:00 a. m., for the night, knowing how hard it would be to make Mattituck with no lights on the breakwater.

(*Continued on page 60.*)

YARD AND SHOP

The large and well equipped factory where the Buffalo marine engines are built.

Loew Mfg. Company Appoints Chicago Agents.

The Loew Mfg. Company, of Cleveland, O., manufacturing the Loew Victor four cycle motors, sizes from 5 to 60 h.p., have appointed the Chicago Boat and Engine Company, 1508 Michigan Boulevard, Chicago, Ill., as their representative for the territory in the vicinity of Chicago. They will carry a full line of the famous Loew Victor engines in stock at all times. These engines have made a name for themselves in many racing boats during the past year but are as well suited to cruiser and runabout. It was a model 5 Loew Victor engine with which Old Glory II was powered, the story of her trip from New York to Nova Scotia and return appearing in the December and January issues of MoToR BoatinG.

Sterling Engine Company's Advance Catalogue for 1913.

The Sterling Engine Company, of Buffalo, N. Y., have issued a very practical folder showing many of the models of their product together with a number of famous boats powered with Sterling engines as a forerunner to their 1913 catalogue. It contains a fine collection of engines and boats with descriptive matter concerning the suitability of their various models for various types of boats. It will be remembered that all three of the International defenders in 1912 were equipped with Sterling engines.

This company also announces the appointment of the Warren Sales Company, 1413 Michigan Avenue, Chicago, Ill., to handle their engines in the vicinity of Chicago. This concern will inaugurate a service department that will assure all persons patronizing them the best kind of attention, both in the installations of their outfit and prompt and careful attention afterwards.

Announcement is also made that the Pyke-Putnam Motor Company, 371 St. James Street, Montreal, Que., have been appointed agents for handling the Sterling engines in the vicinity of Montreal and the Province of Quebec. In addition to carrying the full line of Sterling engines, the Pyke-Putnam Motor Company will carry a full line of spare parts so that any necessary repairs can be made during the boating season without the loss of time.

Bath Marine Construction Company's New Boats.

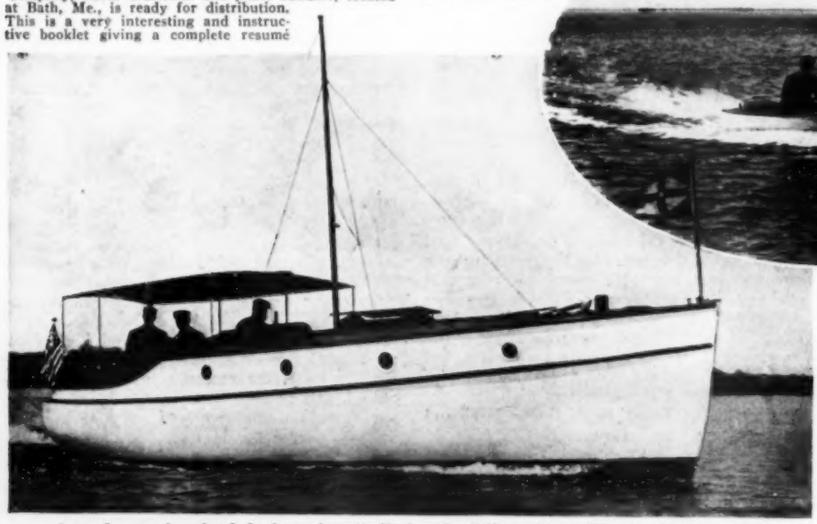
The 1913 catalogue of the Bath Marine Construction Company, naval architects and yacht builders, located at Bath, Me., is ready for distribution. This is a very interesting and instructive booklet giving a complete resumé of all their boats, including V-bottoms, rowing and power tenders, runabouts, hydroplanes and cruisers. This company is able to furnish boats of almost any description in almost any degree of completion from the plans or patterns to a completed craft. It should be of value to MoToR BoatinG readers to obtain a copy of their catalogue.

New Agents Appointed for the Carlyle Johnson Machine Company.

The Carlyle Johnson Machine Company of Manchester, Conn., has recently appointed the Eastern Marine Motor Sales Company, 136 Liberty Street, New York City, its agents for New York City and vicinity; the A. S. Morse Company, 43 High Street, Boston, Mass., for Boston and vicinity; The Nichols & Wright Motor Company, 48 South Division Street, Buffalo, N. Y., for Buffalo and vicinity; and Dan Kidney & Son, 1112 Michigan Boulevard, Chicago, Ill., for Chicago and vicinity. The outlook seems to show that there will be an enormous demand for these reverse gears next season and the company is very busy at present in stocking up so as to be ready to make immediate deliveries. Each of these agents will carry a full line of gears for motors of from 1 to 40 h.p. and the public will have a chance to inspect the smallest encased reverse gear yet manufactured for use in connection with the small tender and motor canoes. The reputation of these reverse gears is well known throughout the country as being of the best on the market.

Stock Models by the Milton Boat Works.

The Milton Boat Works of Rye, N. Y., builders of the famous Elmo II type of cruisers, are building a number of stock boats during their slack season. These boats are especially well built with the same painstaking care that characterizes all Milton boats, the majority of which are built on special order. These boats are far from being thrown together out of cheap material. Their largest stock boat is a 31 foot raised deck cruiser that makes a remarkably comfortable craft for extended cruising with a small party. Their semi-speed 20 foot runabout is framed of selected oak, planked with cedar and trimmed with mahogany, making an exceptionally fine boat capable of more than 15 miles an hour with a 12 h.p. motor. The stock 18 ft. boat was designed to be an inexpensive family boat. Her ample beam insures stability and her model is one that is easily driven, a 3 h. p. motor giving her a speed of about 7 miles per hour. This company has also built during the past season many yacht tenders, speed boats and hydroplanes besides doing quite a little repair work. They are equipped to build anything up to 90 ft. in length and the high quality of their products is well known.



A 31 ft. stock raised deck cruiser built by the Milton Boat Works of Rye, N. Y.

A fast Milton stock runabout.

A 20-Mile Power Dinghy.

The Eastern Marine Motor Sales Company, 136 Liberty Street, New York City, having yards at Ulmer Park, Brooklyn, have on the market a 12 ft. power dinghy of a type to be known as the Brownie Junior. This little boat which can be readily stowed on deck will accommodate four people and with a 20 h.p. motor is expected will do at least 20 miles an hour. The construction throughout is of the best and she is not to be classed with a flimsy high speed runabout.

An Error Corrected

In the December issue of MoToR BoatinG in the write-up of the Samson tiller rope, the name Samson was several times mis-spelled and it gives us pleasure to correct this at this time. This tiller line which is manufactured by the Samson Cordage Works, 88 Broad Street, Boston, Mass., is especially well known as a most satisfactory article. Their claim that it will neither stretch or shrink is well founded and it may be had cotton covered with either a bronze or galvanized steel center in different diameters.

Cape Cod Power Dory Company's Large Factory.

From a small beginning the Cape Cod Power Dory Company has had a steady healthy growth from year to year which is well deserved on account of the fine quality of their products. Their factory is equipped with modern machinery and their output is largely of stock models designed by Gurney. Special attention is given to seasoning the wood before it is used and then to the cutting, setting up and finishing. As the factory is located on the main line of the Cape Cod division of the New Haven Railroad, it is very accessible and the management always welcomes visitors and takes pride in showing their boats in the various stages of construction.

Mullins-Ferro 1913.

A big deal was consummated recently when the W. H. Mullins Company placed an order with the Ferro Machine & Foundry Company for 2,000 engines for 1913, undoubtedly one of the largest single orders for marine engines ever placed with one concern. This combination is a good one, and the W. H. Mullins Company has an annual capacity of between 7,000 and 8,000 boats, while the Ferro Machine & Foundry Company has gained the reputation of being one of the largest manufacturers of two-cycle marine engines in the world.

Mullins boats are designed by naval architects of national reputation, insuring the finest stock models ever attempted by any builders. The construction is similar to that of the government torpedo boat—rigid puncture-proof plates of double galvanized steel, pressed to true and lasting form in large dies by powerful drop presses—a construction that enables the manufacturers to sell this interesting steel boat under an absolute guarantee against puncture, leaking, water

logging, drying out, warping, opening seams and the necessity of calking.

More Mullins steel hulls powered with Ferro engines will be used next season than ever before, as a result of close co-operation between the two firms. Each of these companies is preparing a handsome catalogue for 1913 and will gladly furnish same to our readers upon request.

Fulton Engines Invade Southern Territory Further.

The Fulton Manufacturing Co. of Erie, Pa., manufacturers of the Fulton self-sparking engines, announce the establishment of two important agencies in the south. The Gibb Gas Engine Company of Jacksonville, Fla., one of the oldest and best established gas engine houses in the south, will carry a full line of Fulton self-sparking engines and parts. W. H. Pieper

Montana, a 60 x 12 ft. Racine cruiser.

of 99 East Bay Street, Charleston, S. C., will also carry a full line in stock and will be prepared to demonstrate the engine running in boats at the wharf in front of his store.

Fay & Bowen Company Important Sales.

The Fay & Bowen Engine Company of Geneva, N. Y., manufacturers of the high-grade two and four-cycle engines of the same name, announce that they have just shipped to Cape Gracias, Nicaragua, a 19 ft. open boat with canopy top, equipped with a 5 h. p. single-cylinder Fay & Bowen two-cycle engine, for use in missionary work among the Nicaraguan Indians. They have also recently shipped to Mr. Victor Herbert, the well-known composer, one of their standard family boats, equipped with a two-cylinder, two-cycle, 15 h. p. Fay & Bowen engine. Mr. James N. Rawleigh of Chicago has recently installed in his 37 x 5 ft. boat on Lake Geneva, Wis., a Fay & Bowen four-cylinder, four-cycle, 45 h. p., which has increased the speed of the boat over five miles an hour. It is with a two-cylinder Fay & Bowen engine that Querida II is equipped, which is now making the trip from New York to the west coast of Florida and Gulf of Mexico ports, accounts of which are appearing in current issues of MoToR BoatinG.

Hand V-Bottom Boats With Loew Victor Engines.

On page 88 of the December issue of MoToR BoatinG it was erroneously stated that Mr. Wm. H. Hand's Piute III was equipped with a Scripps motor, which should have read 30 h.p. Loew Victor motor. Mr. Hand is the agent for Loew Victor motors and reports many sales of this excellent engine, with which many of his V-bottom boats are now being equipped. The performance of this make of engine during the past season has fully warranted its adoption for this type of craft. These motors are shipped from the factory ready to run, and after being placed upon the engine bed can be started up at once, without any assembling whatsoever.

Mr. C. J. Atkinson Joins Fairbanks, Morse & Company.

Mr. C. J. Atkinson, inventor and patentee of the Atkinson gas producer and a number of special devices pertaining thereto, has joined the ranks of Fairbanks, Morse & Company. This company will place Mr. Atkinson's services at the disposal of the public for adapting the Fairbanks-Morse gas producers to meet the requirements of the various industries desiring to substitute producer gas for fuel oil.

Mr. Miniter Joins the Rayfield Carbureter Organization.

Mr. N. H. Miniter, who for several years has been sales manager of the Stromberg Motor Devices Company, has resigned his position with that concern and is now associated with the Findeisen & Kropf Mfg. Company of Chicago, builders of Rayfield carbureters, as factory sales manager. He will in the future represent the Rayfield carbureter throughout the country. It will be remembered that this is the type of carbureter with which many of the fastest racing boats in last season's events were equipped, and the results obtained therefrom were exceedingly satisfactory and of the highest order.

Factory of the Cape Cod Power Dory Company at Wareham, Mass.

Anderson Engine Company's New Factory.

The Anderson Engine Company of 140 South Dearborn Street, Chicago, Ill., have in the course of construction a new fireproof factory in Chicago. This building will be completed about January 1st, 1913, and will greatly facilitate the manufacture of the high-grade Anderson marine engine, whose reputation in the past has justified this new up-to-date plant.

Mosler 1913 Spark Plugs.

Following its custom, the A. R. Mosler Co. is again specializing its spark plugs for many of the foremost engines of 1913. The Mosler spark plug is especially designed from a scientific standpoint, intending to meet every contingency that might arise in marine motor operation. As the cylinder walls of every motor vary more or less, it is necessary oftentimes to furnish snark plugs of different lengths in order to bring their base far enough through the wall to make them self-scavenging. If a spark plug is set in a recess it is often advisable to have a deep chamber construction to make the plug easily accessible and convenient for ordinary or even special wrenches. If an oily cylinder, where over-lubrication is unavoidable, a separate plug is almost the necessity, while in most motors the spitfire stuffing box construction assures a more forcible explosion with the deep chamber. The deep chamber plug prevents possibility of a short circuit unless the porcelain is cracked or broken. The question of placing the ignition spark in the proper manner at the exact point in the cylinder where it will give the best results has been studied with much care and worked out with such success by A. R. Mosler & Company that many of the 1913 models of marine engines will be found equipped with Mosler's special plugs particularly built to increase the efficiency and horsepower of each particular engine.

Mr. Moreton Leaves Detroit.

Mr. Walter H. Moreton, one of the engineers on the motor boat Detroit, which made the trip last summer from Detroit, Mich., to St. Petersburg, Russia, and was equipped with a Scripps motor, which drove the boat over four miles for every gallon of gasoline consumed, and only used about one-hundredth of a gallon of lubricating oil per mile, has located in Boston, Mass., where he will represent the Scripps Motor Company, Gray-Hawley Mfg. Company, Dayton Electric Mfg. Company and Berry Bros. His Boston address will be 218 State Street.

Dirigo Compass and Binnacle.

From the smallest to the largest motor boat, the Dirigo compass and binnacle makes an ideal outfit. The 2½-volt Tungsten lamp, which operates on a single dry cell, gives sufficient light of the proper intensity. Mr. Eugene M. Sherman of Bellevue Post Office, Seattle, Wash., manufacturer of these outfits, states that he has yet to receive a single complaint. On the recent ocean trip of the Detroit, Dirigo compasses demonstrated their practical work. Two of them were used—one for the standard compass and the other for steering. They are made in five sizes.

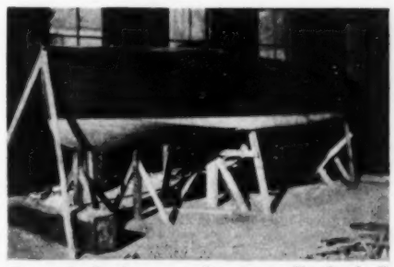
Ferro Engines in the Export Trade.

Shipments of Ferro engines during the last 45 days have been unusually large for this season of the year. The export business has been particularly active, three carloads having been forwarded via New York to foreign points. Practically all the export business of the Ferro Machine & Foundry Company is handled by carload shipments to New York, and there distributed to the various steamboat lines to Europe, Asia, Africa, Australia and Central America.

In addition a carload shipment has just been made to the Ferro's Newfoundland distributors, the L. M. Trask Company of St. John's, Newfoundland. In this province, as in many other sections of the globe, the word "Ferro" stands in the minds of the buyers as a general term for engines. The Ferro Company also reports extensive sales in the southern states, and further report the prospects for 1913 as most encouraging.

Remington Oil Engine for a Stern Wheeler.

The Remington Oil Engine Company's bulletin for December describes a very successful stern paddle wheel river boat engaged in the freight and packet industry operating on the Black River, Arkansas, and driven by a Remington heavy duty oil engine of 30 h.p. The engine of this boat is located directly under the pilot house. The boat has a steel hull 68.6 ft. long by 16 ft. beam, with a longitudinal shaft 1 15/16 in. in diameter running from the engine to a 2 3/16 in. countershaft. The end of the larger shaft carries

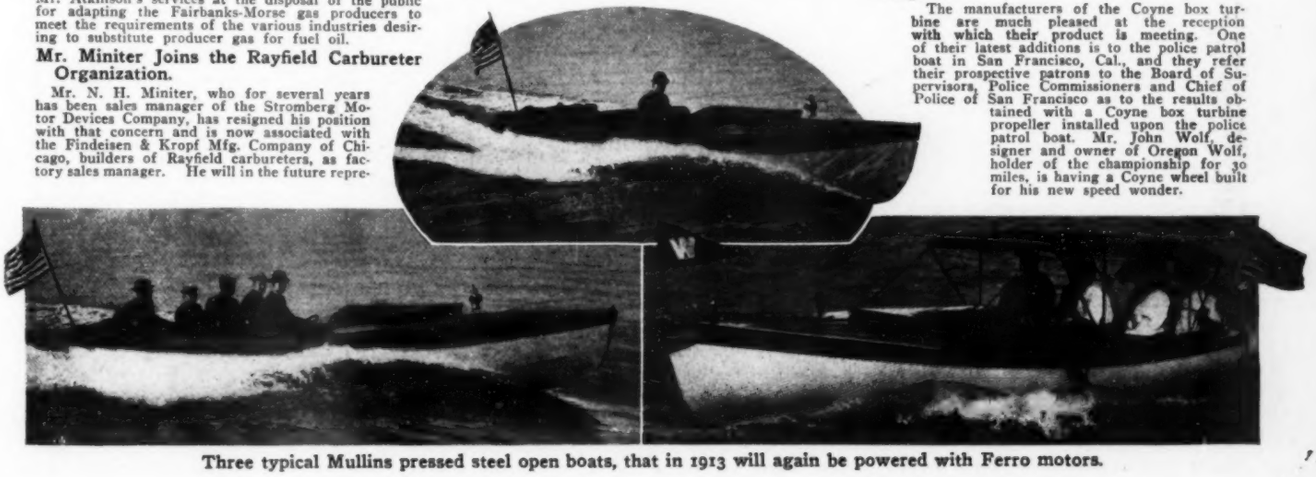


Brownie Junior, a 12 ft. power dinghy built by the Eastern Marine Motor Sales Company of New York.

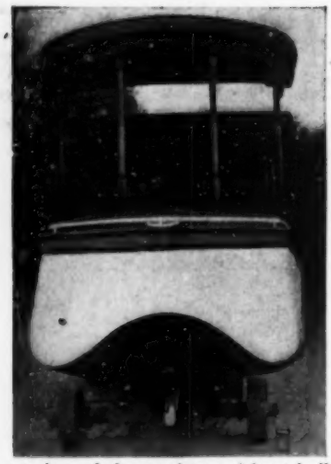
a steel bevel pinion, meshed with two cast iron bevel gears on the countershaft. Each gear on the countershaft is fitted with a friction clutch, so that the boat may be stopped, started, driven ahead or astern without stopping the engine. The paddle wheel is 8 ft. in diameter by 11 in. face, carrying ten 13-inch paddles, and turn at 38 r.p.m. The last trip of 130 miles, with 100 tons, cost $3.60 for fuel at 9 cents a gallon.

Police Boat Equipped With a Coyne Box Propeller.

The manufacturers of the Coyne box turbine are much pleased at the reception with which their product is meeting. One of their latest additions is to the police patrol boat in San Francisco, Cal., and they refer their prospective patrons to the Board of Supervisors, Police Commissioners and Chief of Police of San Francisco as to the results obtained with a Coyne box turbine propeller installed upon the police patrol boat. Mr. John Wolf, designer and owner of Oregon Wolf, holder of the championship for 30 miles, is having a Coyne wheel built for his new speed wonder.



Three typical Mullins pressed steel open boats, that in 1913 will again be powered with Ferro motors.



Stern view of the semi-tunnel boat built by the Rippley Steel Boat Company, Grafton, Illinois.

1913 Boston Motor Boat and Engine Show.

The 1913 Boston Motor Boat and Engine Show, which will be the tenth annual exhibition, appears to be destined to be the best in the history of the New England Engine and Boat Association, under whose auspices it will be held in the Mechanics Building, Boston, February 1st to 8th, inclusive. Every day brings further demonstration of the popularity of this show by additional applications for space, and the letters from the trade indicate great interest in the forthcoming exhibition. Mr. Chester I. Campbell, general manager, 5 Park Square, Boston, is convinced from personal contact with the conditions that the coming season will also be the greatest in the history of the trade, and that the industry is coming into its own as a logical result. The quicker the management as well as the inhabitants of the New England States realize the wonderful advantage of this section, the better for the sport of motor boating.

A New Strelinger Catalogue.

The Strelinger Marine Engine Company of 171-175 West Woodbridge Street, Detroit, Mich., have issued a very attractive catalogue describing their products. These include the Strelinger four-cycle, heavy duty marine engine; the Little Giant two-cycle general utility marine engines, and the Junior four-cycle stationary engine. This company also handles a line of accessories which are thoroughly described in their catalogue, a copy of which will be sent to any of our readers interested.

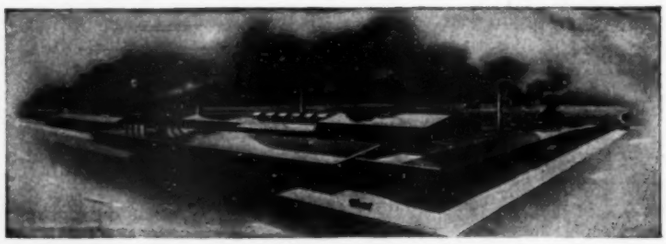
Proper Care of Storage Batteries During the Winter Months.

The Willard Storage Battery Company of Cleveland, Ohio, makers of the celebrated storage battery of the same name, have issued a specially concise and clear set of rules governing the care of storage batteries during the winter months. In most types of secondary batteries, unless the proper attention is given to preparing them for their long period of inactivity, the results in the spring may prove disappointing. A storage battery is at its best when in constant use, and no amount of intelligent use will cause it to deteriorate so rapidly as idleness unless it is prepared for it. Therefore we advise all of our readers to obtain a copy of these rules from the Willard Storage Battery Company.

Turner Gasoline Torch.

The Turner Brass Works, Sycamore, Ill., have recently designed another improvement for their line of gasoline blow torches and furnaces which they consider the most important change in construction which they have yet made, and which is known as the Turner improved pump cap and former, which is fully covered by patents.

Users of blow torches and furnaces are familiar with the common difficulty experienced in re-inserting the leather pump washer into the pump cylinder of the ordinary blow torch without buckling or cutting the leather, making the pump unfit for use. This difficulty is entirely overcome in the Turner improved pump cap and former as applied to the Turner tools. A good pump is essential to a good blow torch or furnace, inasmuch as it is impossible to secure a hot blast flame from even the best constructed burner unless there is a strong air pressure in the tank produced from the action of the pump. It is essential therefore that the air pump be kept in perfect condition by frequently oiling and softening the leather pump washer, and this is made easy by the new Turner improvement.



Factory of the Northwestern Steel & Iron Works, Eau Claire, Wis., where the Northwestern engines are built.

Mr. L. H. Atkinson, Sales Manager, Fiske Bros. Refining Company, New York.

Charles E. Miller's 1913 Catalogue.

Charles E. Miller, with main offices 97 to 103 Reade Street, New York City, and 14 branches located in various sections of the country, from Boston on the north to New Orleans on the south and Detroit on the west, has issued his advance catalogue No. 24 for 1913, which is more attractive than ever. It contains 144 pages given up to various phases of the gas engine and motor boat line, and it is well worth any reader's while to get a copy of this catalogue.

Rice Bros. Company's New Catalogue.

The Rice Bros. Company of East Boothbay, Me., have issued a new catalogue describing their several types of motor boats ranging in size from the small yacht tender up to the 20 ft. fast runabout. This catalogue is attractively designed and gives a very complete description of the celebrated Rice stock motor boats.

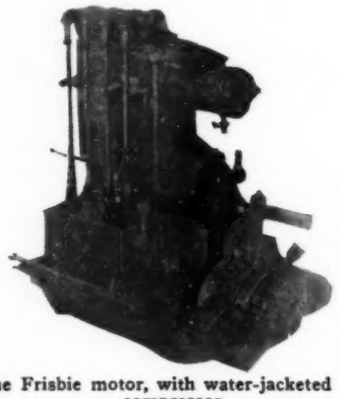
Reiter 16 Ft. Special.

The S. J. Reiter Boat Mfg. Company, Toledo, Ohio, is manufacturing a 16 ft. open boat of excellent design and construction and selling it on a new plan of payment that enables the purchaser to use the boat while he is paying for the same. One excellent feature of the boat is that it is fully equipped when it leaves the factory, so that all the purchaser has to buy is gasoline. This company was recently organized by Mr. S. J. Reiter, who is well known as a capable boat builder, and they will soon be able to furnish boats of all sizes and types. Their 1913 catalogue may be had for the asking.

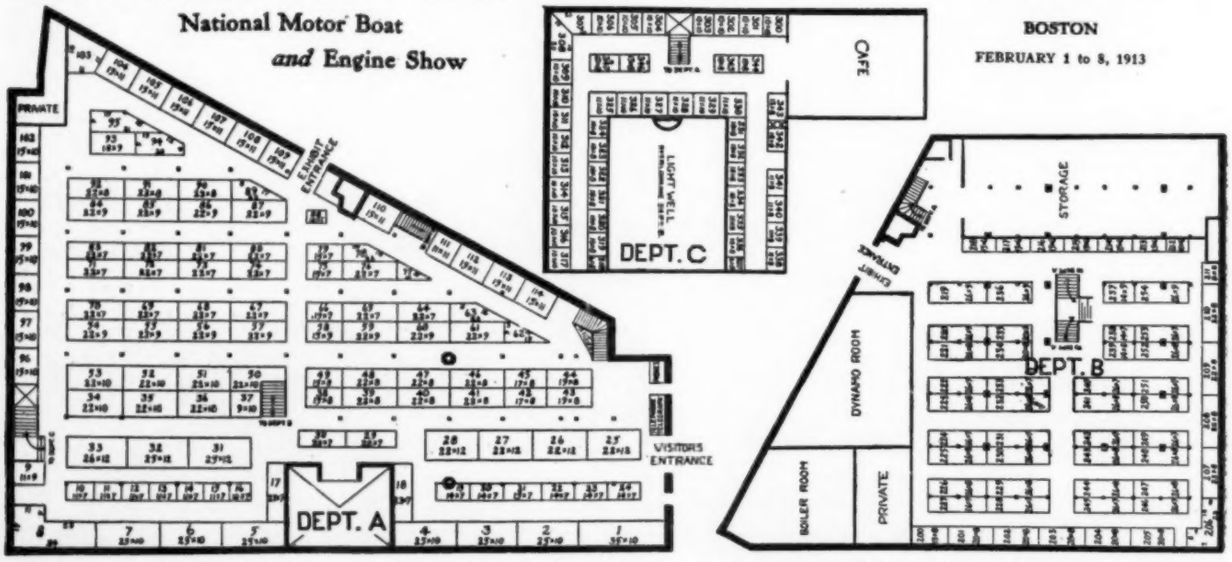
Buffalo Gasolene Motor Company's Increase of Plant.

Recent additions to the Buffalo Gasolene Motor Company's plant have increased their floor space by nearly 36,000 square feet and will permit the most up-to-date methods of handling the company's product. New machines installed include traveling cranes and an overhead trolley system used in loading and unloading to railroad cars which are located only 8 ft. from the plant; a new Brown & Sharp carbonizing furnace, two 50 h.p. electric motors and a new lighting plant.

The Buffalo company's testing room is now the most complete of its kind in the country and suitable for making complete tests on all engines from a few horsepower in size up to 250 h.p. New machines have been added also to the milling, gear cutting, screw machine, cylinder, crank turning and boring departments.



The Frisbie motor, with water-jacketed air compressor.



Floor plan of Mechanics Hall, Boston, Mass., where the Boston Motor Boat and Engine Show will be held February 1 to 8, 1913.

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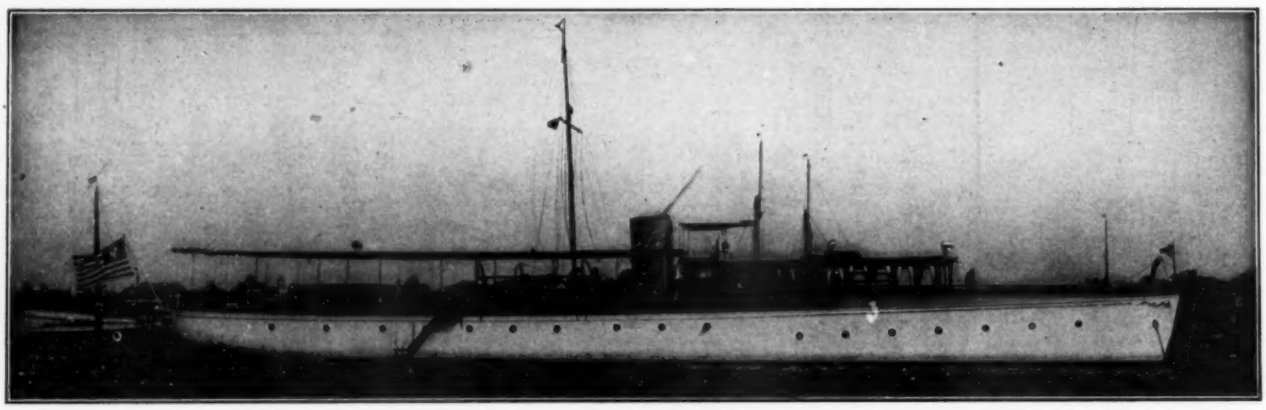
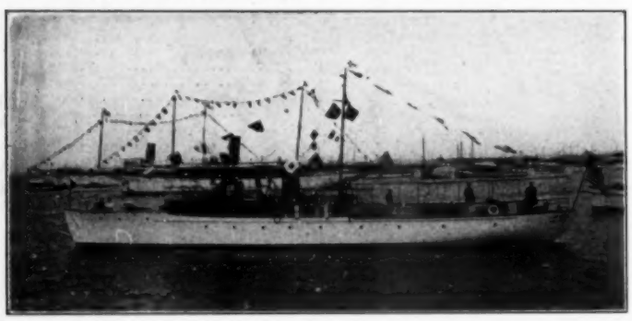
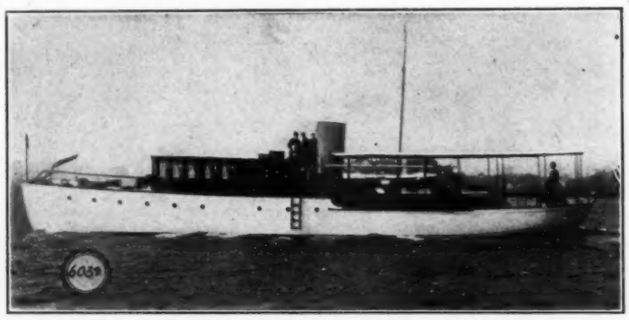


No. 885.—For Sale or Charter.—Exceptionally handsome, fast, steel, twin screw cruising power yacht; 118 x 16.6 x 5 ft. Built 1910, from our design. Speed up to 18 miles; two 300 H. P. Craig motors, three double staterooms, main and dining saloons, two bathrooms, electric lights, etc.; handsomely finished and furnished. Probably the most desirable proposition ever offered in a large gasoline yacht. Apply to Cox & Stevens, 15 William St., New York.

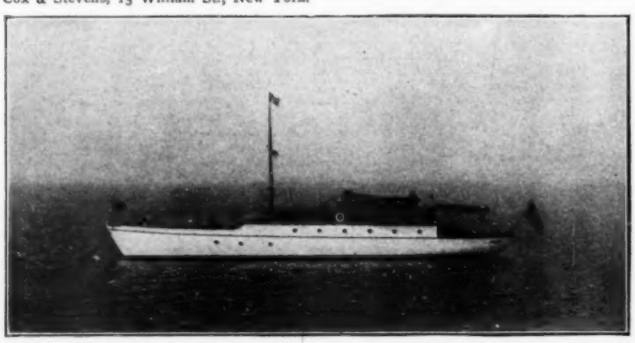


No. 1798.—Bargain.—Fast and able cruising power yacht; 105 x 15.5 x 4.9 ft.; built 1910; speed 16-20 miles; two 300 H. P. Standard motors; three double staterooms, dining saloon, baths; electric lights; fully found. Cox & Stevens, 15 William St., New York.

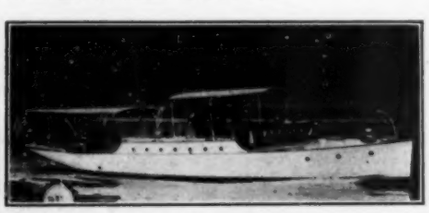


No. 603.—For Sale or Charter.—Twin-screw cruising power yacht, 83 x 14.3 x 4 ft. Speed 12-14 miles. Lawley built from our designs. Excellent accommodation. Cox & Stevens, 15 William St., New York.

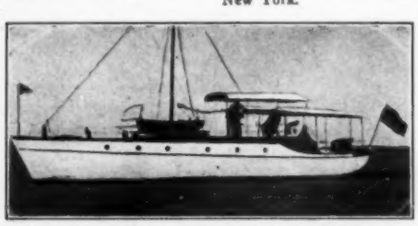
No. 1532.—For Sale or Charter.—Best 75 ft. cruising power yacht available. Speed 12-14 miles; twin screw. Three staterooms, bath, independent lighting plant, etc. Cox & Stevens, 15 William St., New York.



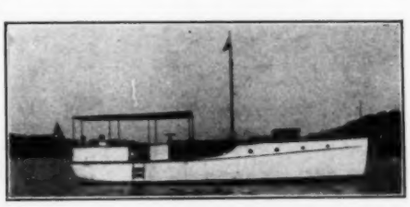
No. 484.—Exceptional Bargain.—Twin screw gasoline cruiser; 70 x 12 x 3.6 ft. Speed 13-15 miles; two 40-50 H. P. Speedway motors (new 1911). Two double staterooms, large saloon, electric lights, etc. Apply to Cox & Stevens, 15 William St., New York.



No. 1387.—For Sale.—Very desirable twin screw gasoline cruiser; 65 x 11.6 x 4.3 ft. Built 1911. Speed 13-14 miles; 20th Century motors. Two double staterooms, dining saloon, bath. Cox & Stevens, 15 William St., New York.



No. 535.—Excellent Bargain.—Raised deck cruiser; 55 x 11.6 x 3.6 ft. Speed 10 miles. Double stateroom, large saloon, electric lights, etc. Owner anxious to sell on account building schooner from our design. Cox & Stevens, 15 William St., New York.



No. 1075.—For Sale.—Raised deck cruiser; 40 x 9.8 x 3.6 ft. Built 1910 by Electric Launch Co. Speed 10 miles, 16-20 H. P. Standard motor. Stateroom, saloon, toilet room, etc. Bargain. Cox & Stevens, 15 William St., New York.

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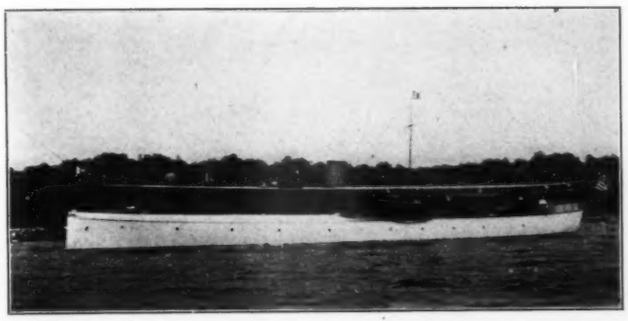
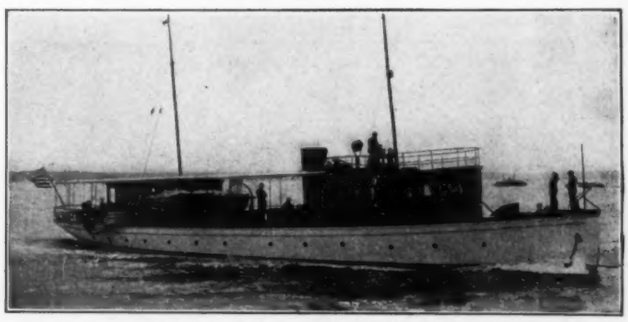


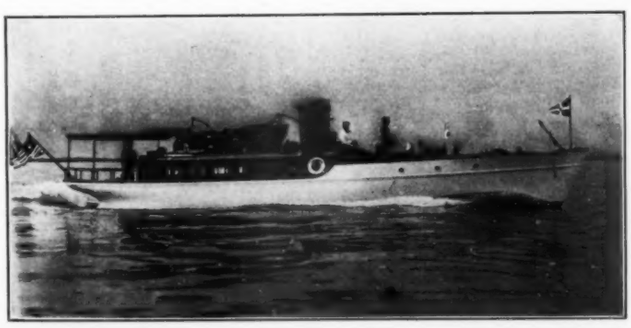
No. 7183.—Lawley cruiser, 112 over all; 5 staterooms; bath; two 150 Craigs; speed 14 knots; electric lights and heat; low price. Stanley M. Seaman, 220 Broadway, New York.



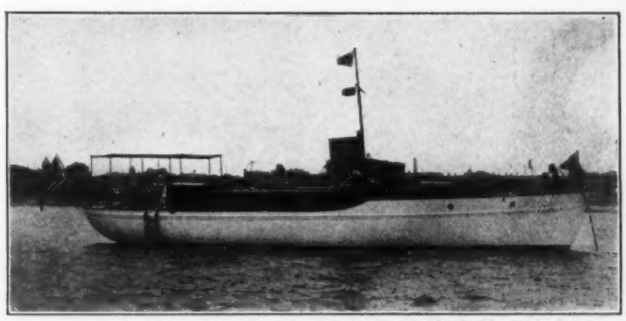
No. 6731.—Elegant cruiser, 98 x 16; 3 staterooms; 2 baths; two 75 Standards; speed 13 knots; low price. Stanley M. Seaman, 220 Broadway, New York.

No. 7165.—64 x 13½; by Herreshoff, 1912; 3 staterooms; electric lights. Stanley M. Seaman, 220 Broadway, New York.

No. 7081.—64 x 17 x 3½; Lawley build; four staterooms, 2 saloons, bath; 25 Standard; Ideal cruiser. Stanley M. Seaman, 220 Broadway, New York City.

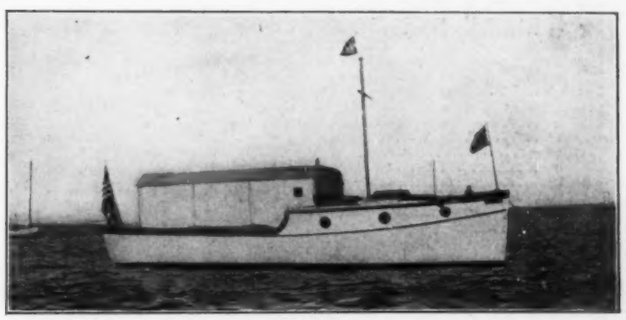


No. 7106.—Latest Cruiser, 56 o. a., 3½ draught; stateroom, saloon; 85 Murray & Tregurtha; speed 15 knots. Stanley M. Seaman, 220 Broadway, New York City.



No. 7120.—Coast Cruiser, 53 o. a.; new 1912; stateroom and saloon, berth 6; 40 Murray & Tregurtha; low price. Stanley M. Seaman, 220 Broadway, New York.

No. 6788.—Famous 40 foot ocean cruiser, cost $5,500; everything in perfect condition; speed 11 miles; big bargain. Stanley M. Seaman, 220 Broadway, New York.



No. 7166.—30 x 7; launched 1910; cabin berths 2; toilet, Acetylene light; low price. Stanley M. Seaman, 220 Broadway, New York.

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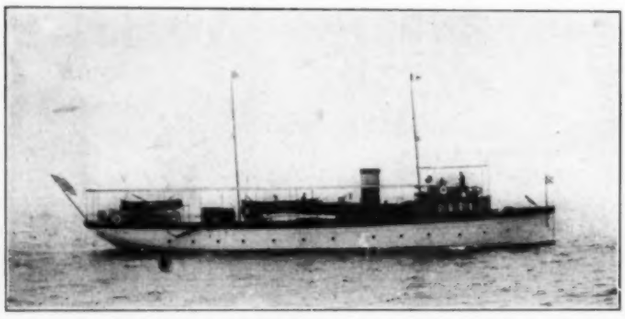
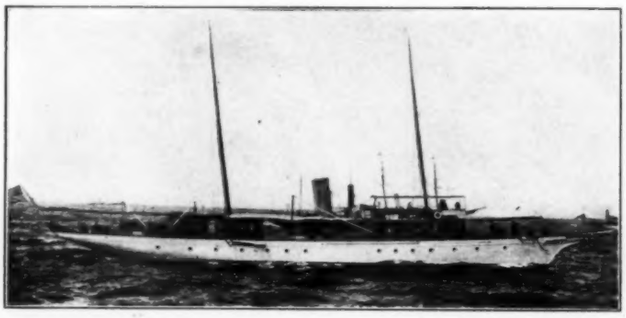
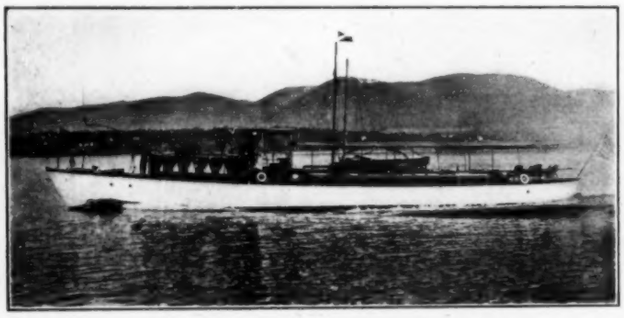


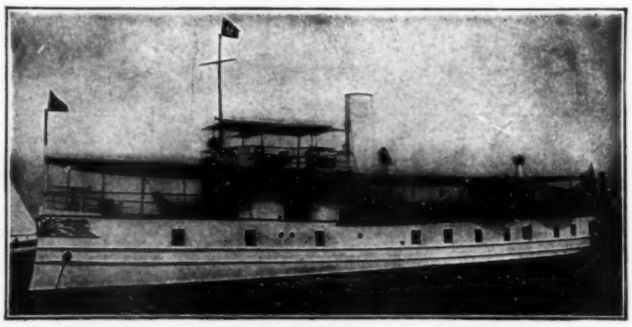
No. 1557.—Sale and charter, flush deck motor yacht, 98 x 16 ft., two Standard engines.
Please mention MOTOR BOATING.



No. 113.—Steel steam yacht, 140 ft. x 18 ft. 6 ins. Exceptionally fine accommodation. Condition A1.



No. 1081.—Fast twin-screw cruiser, 90 x 14, Craig engines, speed 16 miles; excellent condition.
Please mention MOTOR BOATING.



No. 422.—Able and handsomely furnished houseboat; twin screw; 116 x 21 x 4; recent build; sale or charter.
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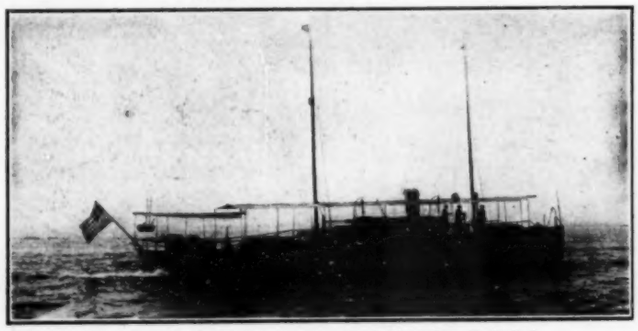
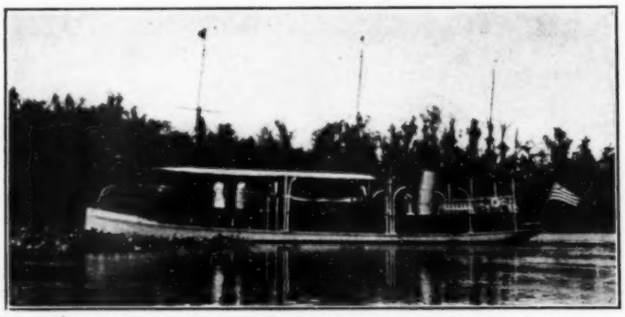
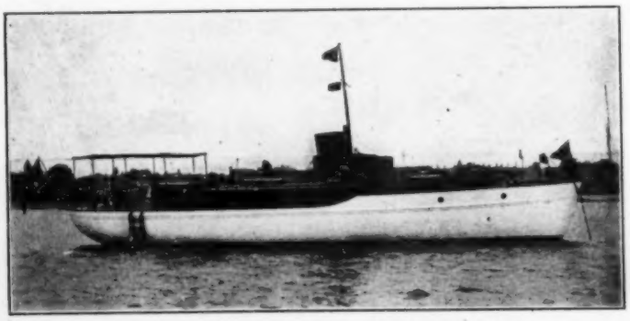


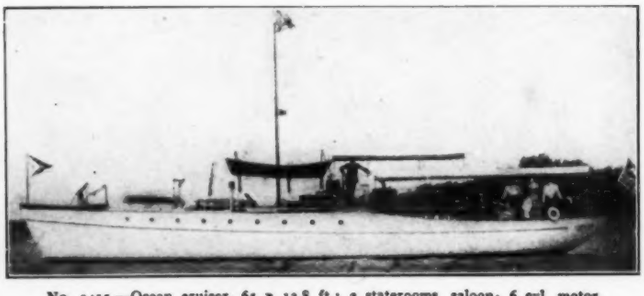
No. 1760.—85 ft. gasoline cruiser; Standard engine, flush deck.
Please mention MOTOR BOATING.



No. 514.—For Charter.—Southern waters, light draft cruiser, 85 x 16.6 ft., triple expansion engine, burns fuel oil.
Please mention MOTOR BOATING.



No. 1875.—New cruiser, 53 ft. x 10; Murray & Tregurtha motor.
Please mention MOTOR BOATING.



No. 1415.—Ocean cruiser, 65 x 13.8 ft.; 2 staterooms, saloon; 6 cyl. motor.
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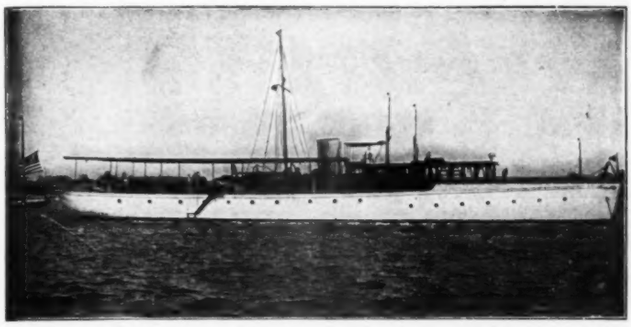
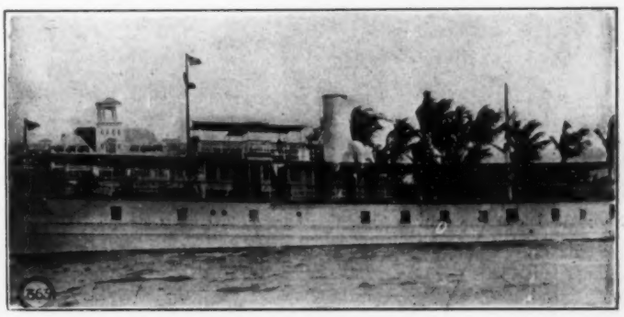
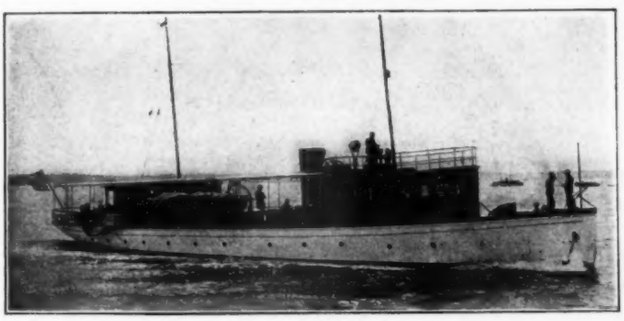


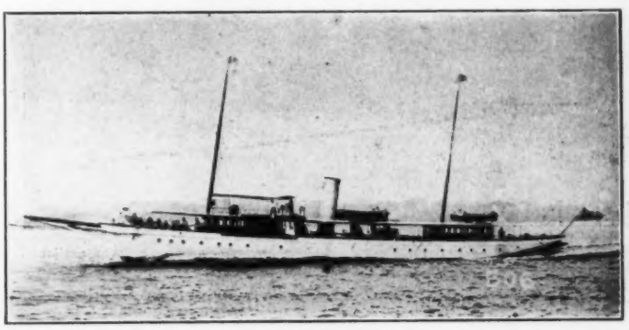
No. 3442.—Sale, Charter; 118 feet, steel twin screw motor yacht; main and dining saloons, three staterooms, two baths.



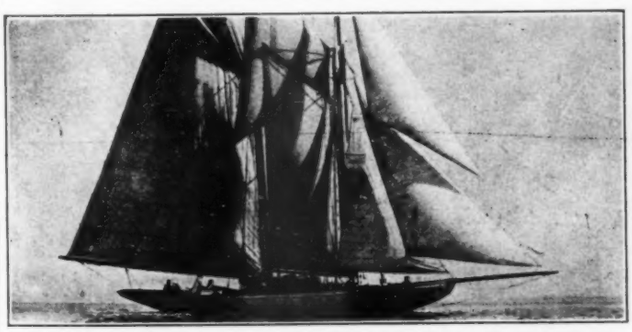
No. 1234—Sale, Charter; built for southern waters; 116 ft. x 21 ft. x 4 ft. 4 in.; five staterooms, five transoms, 4 baths.



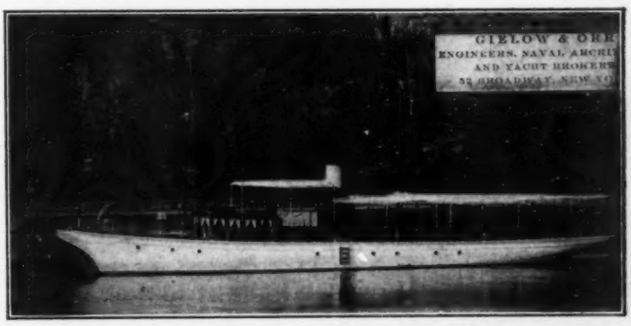
No. 3484.—Sale, Charter.—Twin screw; 98 ft.; 12 to 15 miles; dining saloon, social hall, three staterooms, two baths, Standard motor.



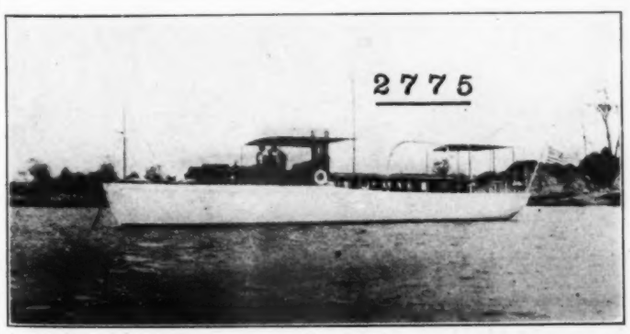
No. 506.—For Sale.—price low; 178 ft. overall steel steam yacht; speed up to 20 miles.



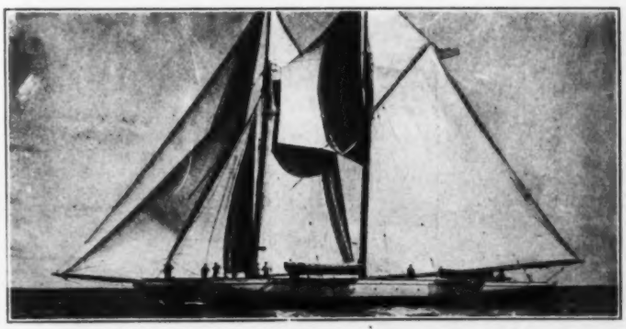
No. 1398.—Sale.—Auxiliary schooner, Lawley built, 43 ft. w. L; accommodations for seven.



No. 2808.—Sale, Charter.—94 ft. x 14 ft. 6 in. x 3 ft. 2 in.; 3 double staterooms; bath. Now in Florida, in commission.



No. 2775.—Sale, Charter.—Smart 60 ft. cruiser; saloon, stateroom, bath.



No. 1035.—Sale; price low; steel auxiliary schooner; 110 ft. o. a.; flush deck; three staterooms, five transoms, bath.

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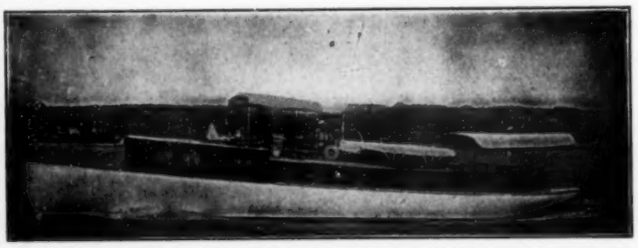
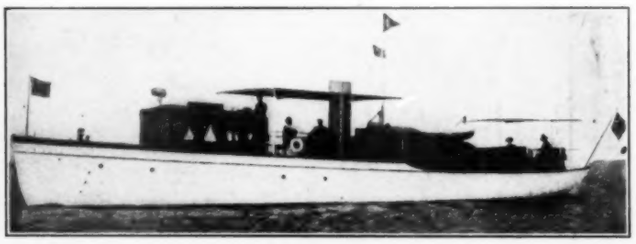


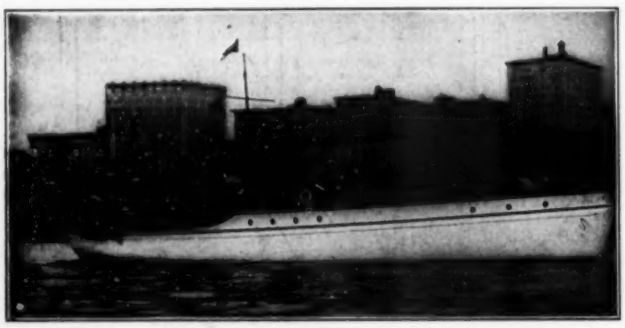
No. 7334.—For charter only, desirable twin screw 65-ft. cruiser; speed 12 miles.

Please mention MOTOR BOATING.



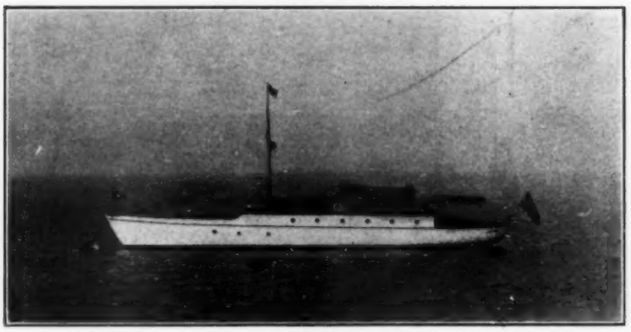
No. 7878.—For Sale.—69 ft. modern twin screw power cruiser; Standard motors.

Please mention MOTOR BOATING.



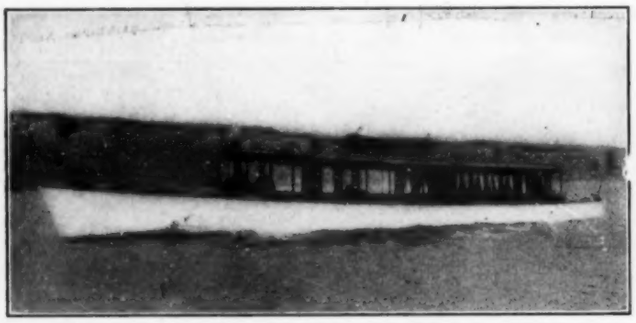
No. 8187.—For Sale—Charter.—Most desirable 75 ft. cruising power yacht available; 3 staterooms, saloon, bath, etc.

Please mention MOTOR BOATING.



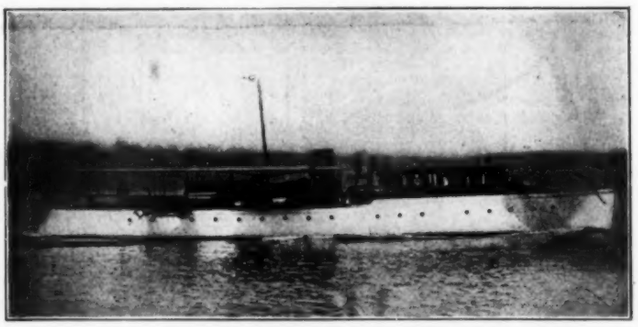
No. 7314.—For sale at a bargain; twin screw gasolene cruiser, 70 x 12 x 3 ft. 6 in. draft; speed 13-15 miles; new Speedway motors 1911; 2 double staterooms, large saloon, etc.

Please mention MOTOR BOATING.



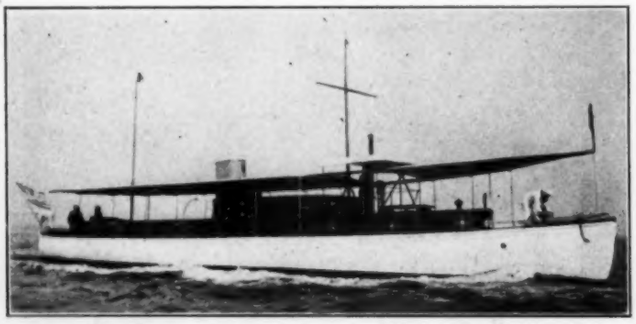
No. 7409.—For Sale.—Exceptionally fast 70 ft. day cruiser; well adapted for ferry service; two 100 H. P. Speedway motors.

Please mention MOTOR BOATING.



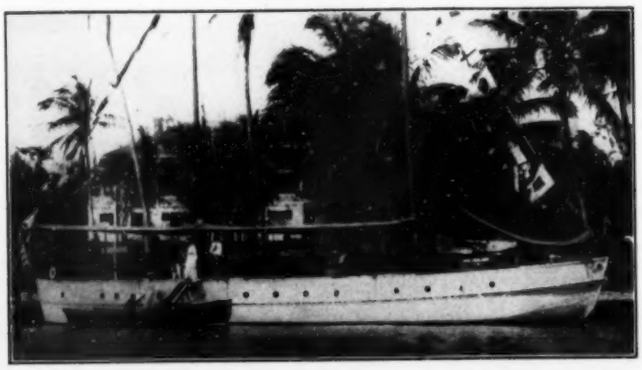
No. 7996.—For Sale or Charter—Modern 98 ft. twin screw cruiser; Standard motors; speed 16 miles.

Please mention MOTOR BOATING.



No. 7142.—For Sale.—Attractive cruising motor yacht, 87 ft. x 15 ft. 10 in. x 4 ft. 6 in. draft; in A 1 condition; thoroughly overhauled 1912 from stem to stern, including machinery; Craig motor; speed 14 miles.

Please mention MOTOR BOATING.



No. 7349.—For Sale, Charter.—75 ft. twin screw cruiser of houseboat type; saloon, 4 staterooms, bathroom, etc.; electric light; 20th Century motors.

Please mention MOTOR BOATING.

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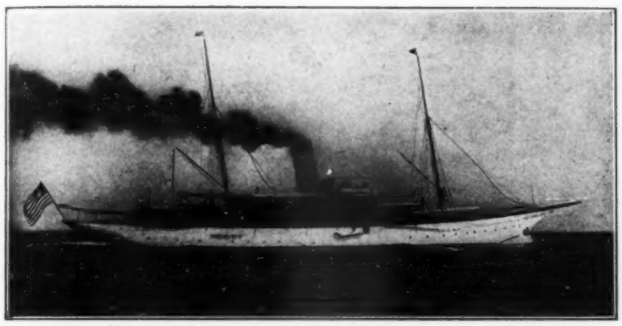
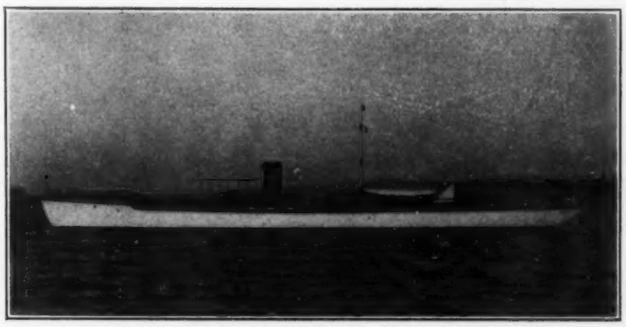
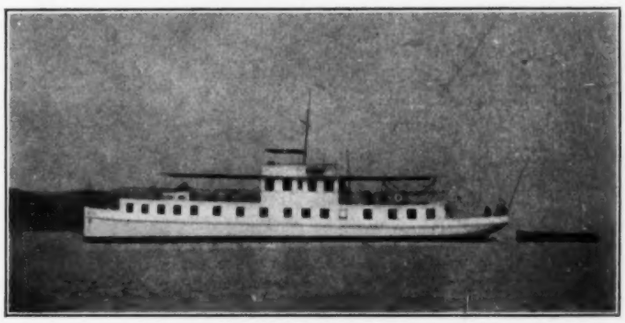


No. 3904.—200 ft. seagoing steam yacht. Accommodations aft. Reasonable price.
Please mention MOTOR BOATING.

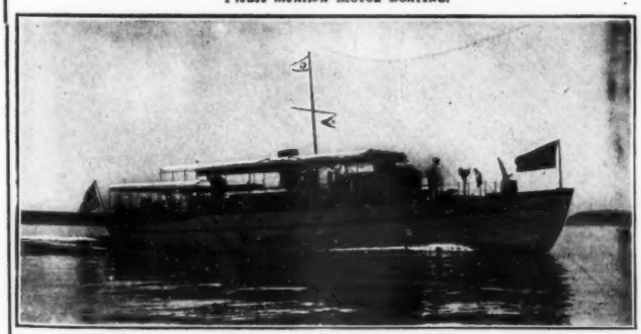


No. 4430.—112 ft. Herreshoff express steam yacht; twin screw; high speed.
Please mention MOTOR BOATING.

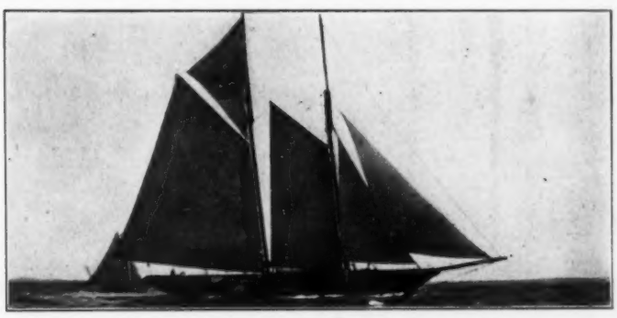
No. 5617.—55 ft. fast day cruiser; six cylinder Speedway motor.
Please mention MOTOR BOATING.



No. 5831.—110 ft. twin-screw gasoline houseboat, speed 10 knots. Charter for South.
Please mention MOTOR BOATING.



No. 4840.—75 ft. gasoline cruiser, available for Southern charter.
Please mention MOTOR BOATING.



No. 4197.—100 ft. auxiliary schooner; Cary Smith design. One of the best cruisers afloat.
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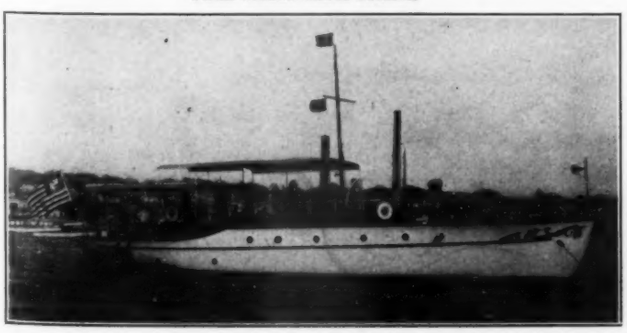
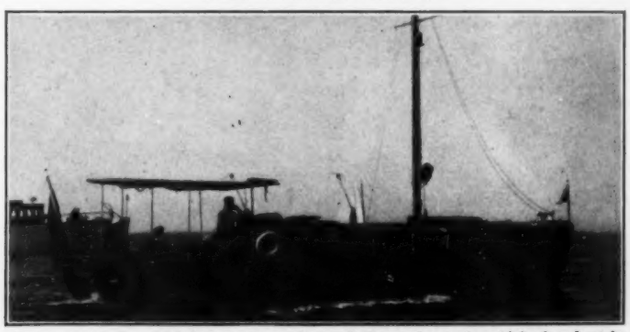


No. 5876.—60 ft. raised deck cruiser; six cylinder; Standard motor; good as new.
Please mention MOTOR BOATING.



No. 5102.—40 ft. raised deck cruiser; Murray & Tregurtha engine; high class boat in every particular.
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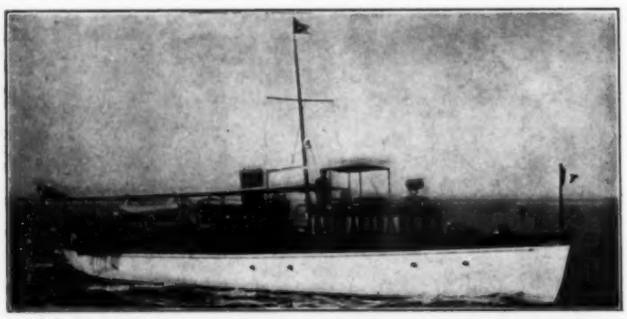
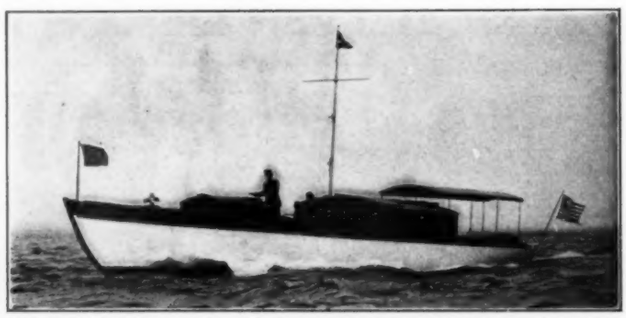
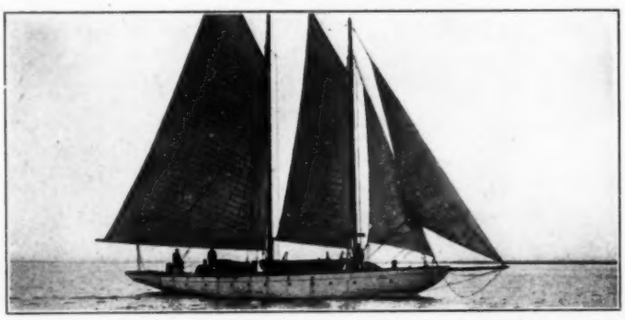


No. 1.—75 ft. ELCO MOTOR YACHT. Built 1911. Standard engine. Speed 12 miles. Full inventory.



No. 2.—54 ft. ELCO DE LUXE. Self-starting Standard engine. Speed 16 miles.
Please mention MOTOR BOATING.

No. 3.—36 ft. ELCO CRUISER. Bridge deck. Accommodations aft. Engine and galley forward. A-1 condition. Speed 12 miles.
Please mention MOTOR BOATING.



No. 4.—60 ft. AUXILIARY SCHOONER. Beam 16 ft. Built by ELCO, 1909. Exceptionally strong and seaworthy.
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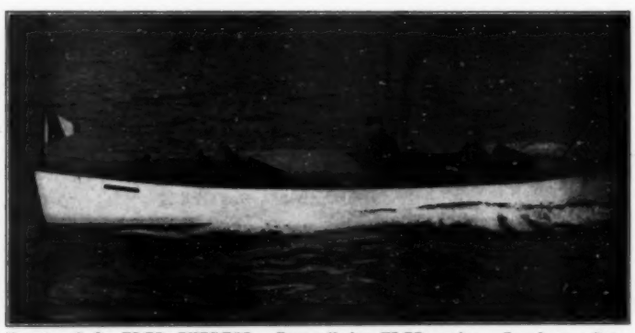
No. 5.—35 ft. ELCO EXPRESS. Six-cylinder ELCO engine. Speed 24 miles. Thoroughly overhauled.



No. 6.—28 ft. ELCO EXPRESS. Four-cylinder ELCO engine. Speed 20 miles.
Please mention MOTOR BOATING.

No. 7.—37 ft. OPEN GASOLINE LAUNCH. Splendid mahogany hull, large carrying capacity. Four-cylinder engine. Speed 12 miles. Bargain.

No. 8.—20 ft. ELCO-PLANE. Built 1912. Speed 35 miles. Perfect condition.
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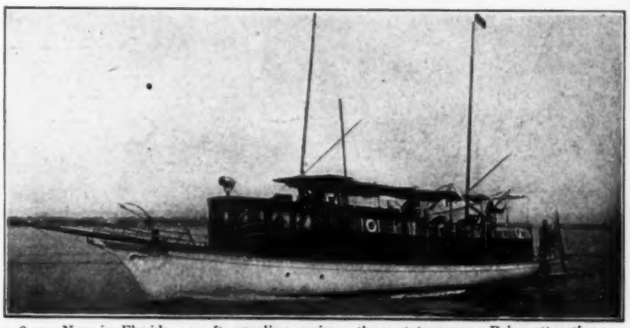
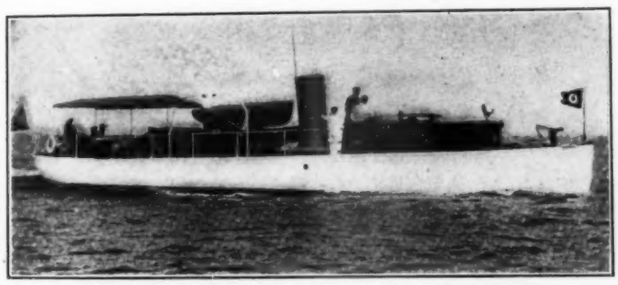
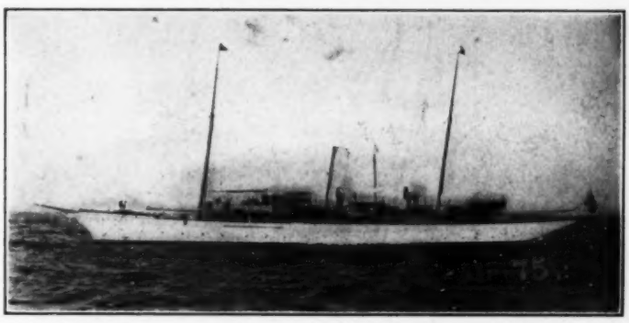
1265.—Now in Florida waters. 50 ft. auxiliary cruiser; 14 ft. 3 in. beam, 2 ft. 6 in. draught; practically new. Double stateroom, saloon with four berths, mahogany finish. Speed 10 miles. Owned by Estate, anxious to close out.



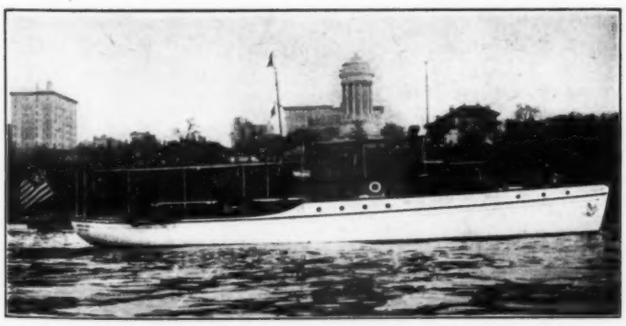
827.—Now in Florida. 75 ft. gasoline cruiser; three staterooms. Price attractive.



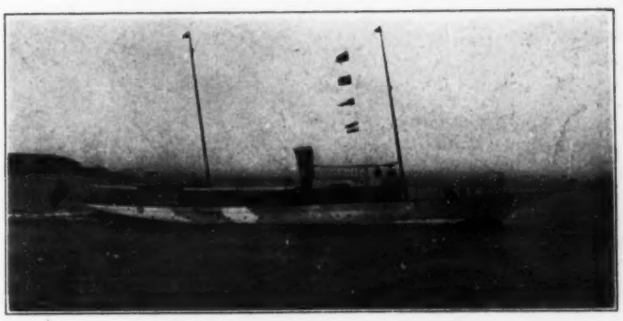
738.—60 ft. gasoline cruiser; stateroom; four berths in saloon.



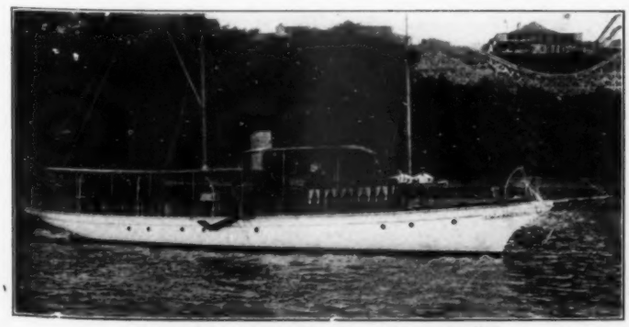
3083.—Sale.—200 ft. ocean-going steam yacht. Splendid accommodation. Price attractive.



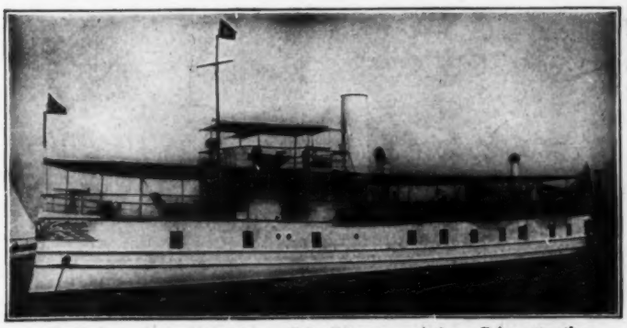
1238.—75 ft. twin-screw cruiser; three staterooms, dining saloon, bath. Speed 14 miles.



3068.—Steel steam yacht, 130 ft. Practically new.



1093.—Sale or Charter.—90 ft. twin-screw gasoline.
Please mention MOTOR BOATING.



3975.—Twin screw steel houseboat. Splendid accommodation. Price attractive.
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No. 1176.—45 x 7.9 x 2.3, mahogany throughout, speed 22 miles. Designed and built by Stearns & McKay Co.

Please mention MOTOR BOATING.

No. 1642.—Fast V bottom launch, 22 ft. x 4 ft. 6 in. x 3 ft. draft; 10 H. P. motor; complete equipment; auto control, spray hood, etc.; seats 4 people; speed 15 miles.

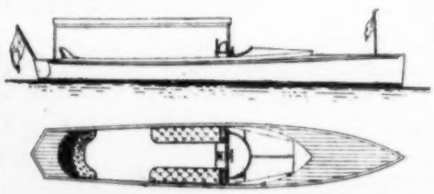
Please mention MOTOR BOATING.

No. 1348.—25 x 30 launch, plain or mahogany finish.

Please mention MOTOR BOATING.

No. 1830.—23 ft. launch, mahogany and cedar; 5 H. P. motor.

Please mention MOTOR BOATING.



No. 95J.—Fast motor launch, our design, 30 ft. o.a. x 5 ft. beam. Very safe and able in a sea way. Guaranteed absolutely first class in every particular.

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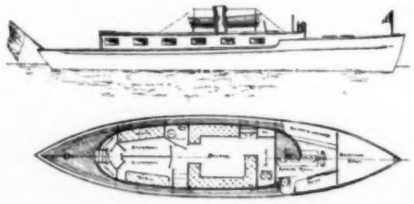

No. 117J.—Cruising motor launch, 50 ft. o.a. x 10 ft. 3 in. breadth x 3 ft. 8 in. draught. Our design. A fine seagoing cruiser, with good speed. Guaranteed first class in every particular.

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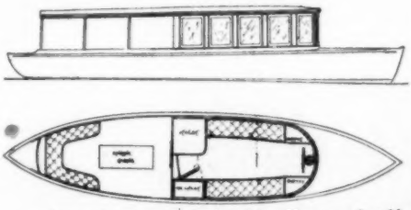

111J.—27 ft. o.a. x 6 ft. breadth. Very comfortable and seaworthy. Our design. Guaranteed first class in every particular.

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Nos. 1583-1672-1751-1067.—21 ft. cabin knockabouts; $100-$600.
No. 1798.—Cruising yawl, 42 x 32 x 10 x 7.4; $1,500.

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No. 1583.—17 ft. fast runabout..... $500
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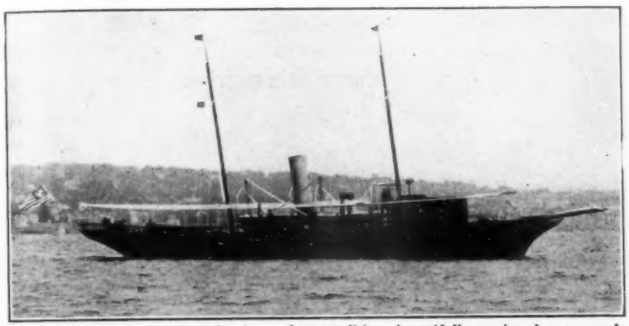

No. 1242.—108 ft. steam yacht, in perfect condition, beautifully equipped, very moderately priced.
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No. 1159.—48 ft. x 10 ft. x 3 ft. motor yacht, built under personal supervision of owner. Interior finished in mahogany and the boat is exceptionally well equipped. Four cylinder 20th Century engine.
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No. 1192.—36 ft. cruiser; 25-32 Hall engine; speed 12 miles.
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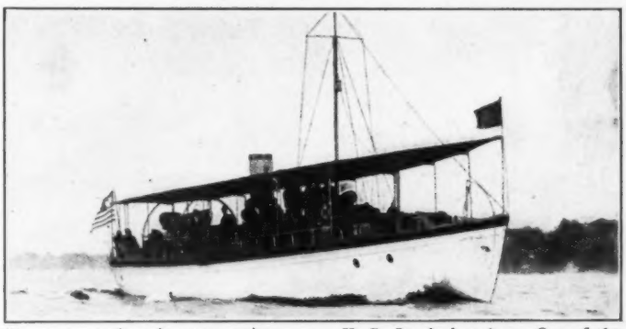
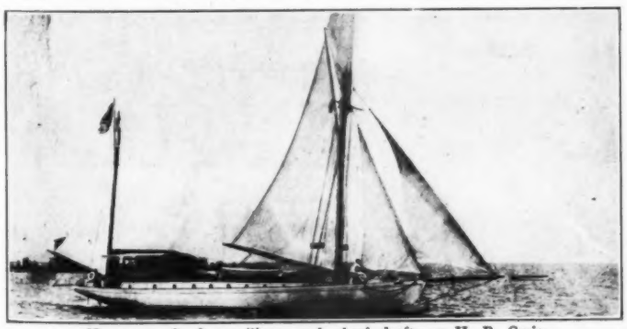
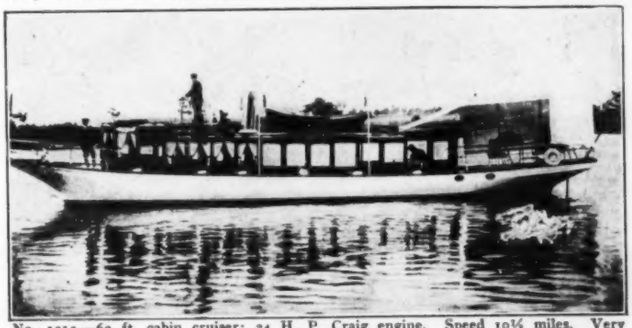


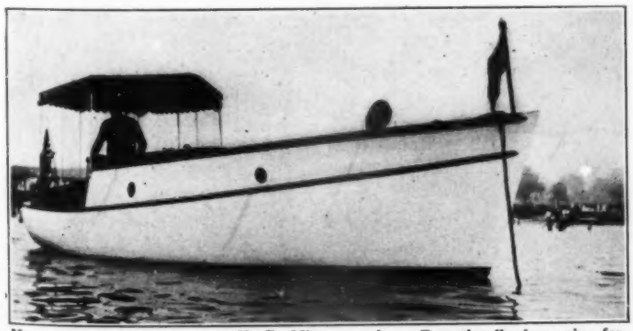
No. 1220.—93 ft. twin screw cruiser; 2 100 H. P. Standard engines. One of the best bargains now being offered.
A. J. McIntosh Yacht Agency, 32 Broadway, New York. Please mention Motor Boating.



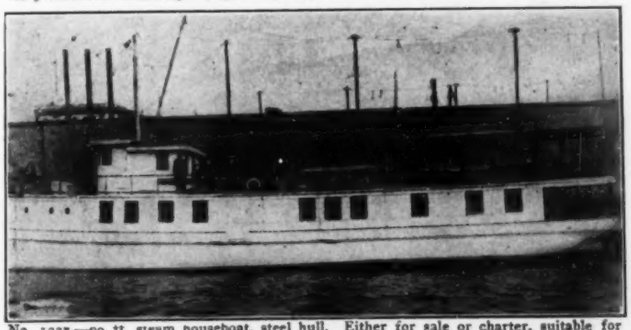
No. 1239.—80 ft. auxiliary yawl, shoal draft; 45 H. P. Craig.
A. J. McIntosh Yacht Agency, 32 Broadway, New York. Please mention Motor Boating.



No. 1212.—62 ft. cabin cruiser; 24 H. P. Craig engine. Speed 10½ miles. Very low price.
A. J. McIntosh Yacht Agency, 32 Broadway, New York. Please mention Motor Boating.



No. 1140.—25 ft. cruiser; 10 H. P. Mianus engine. Exceptionally low price for immediate sale.
A. J. McIntosh Yacht Agency, 32 Broadway, New York. Please mention Motor Boating.



No. 1227.—90 ft. steam houseboat, steel hull. Either for sale or charter, suitable for southern cruising.
A. J. McIntosh Yacht Agency, 32 Broadway, New York. Please mention Motor Boating.

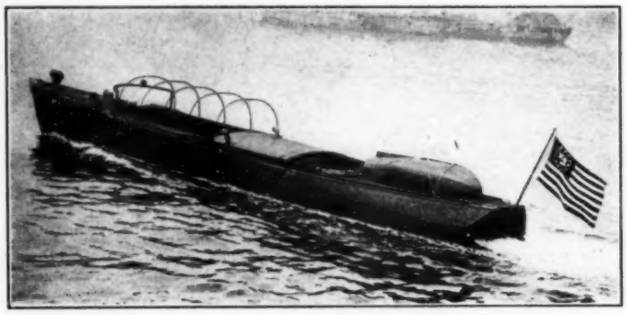
RELIANCE MOTOR BOAT CO.

Builders of the Famous Peter Pans

Hydroplanes, Runabouts, Yacht Tenders, Cruisers. Reliance-Continental Motors—Best in the World

207th STREET AND HARLEM RIVER **Telephone 7510 Audubon** **NEW YORK CITY**

Write us for list of second-hand boats and overhauled motors in prime condition. Tell us what you are looking for.

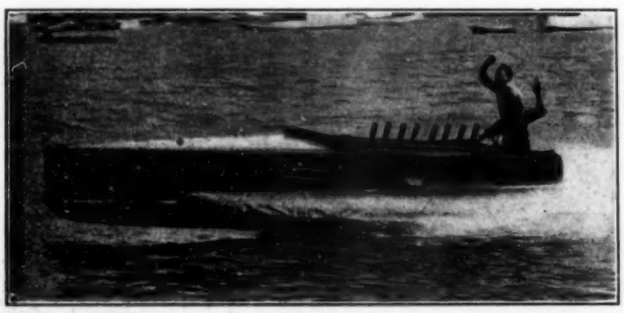


No. 91.—Magnificent 40 ft. x 6 ft. 3 in. mahogany runabout; eight cylinder; 150 H. P. Sterling motor; speed 30 miles. Equal brand new. Complete fittings and furnishings. Sell at two-thirds value.

Please mention MOTOR BOATING.

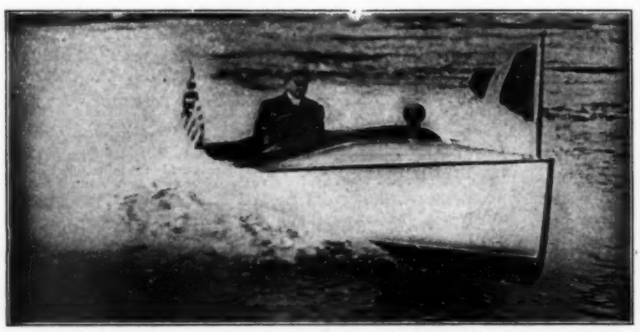
No. 90.—For sale, Peter Pan, Sr., a day cruiser 40 ft. x 7 ft. 9 in.; magnificent mahogany; twin screw; 100 H. P.; two 50 H. P. Reliance-Continental motors. One man control. Every kind of appointment. Cabinet for wines, silver, glasses, etc. Enclosed toilet room and lavatory. Running water. Pullman berth. Electrically lighted throughout. Splendid sea boat. Speed 20 miles. Has had practically no service and equal to brand new in every respect. Winner National Championship, also Long Distance Race, New York to Peekskill and return. Will sell 25 per cent. off value.

Please mention MOTOR BOATING.



No. 89.—Sensational Peter Pan V for sale. Winner International Championship. Best of all hydroplanes. Two watertight compartments; double planked bottom; batten seamed throughout. Construction absolutely best. Perfect condition. New York Sun said she frightened all competitors out of National Carnival except Tech, Jr., which made fastest mile in the world; and she beat Tech.

Please mention MOTOR BOATING.

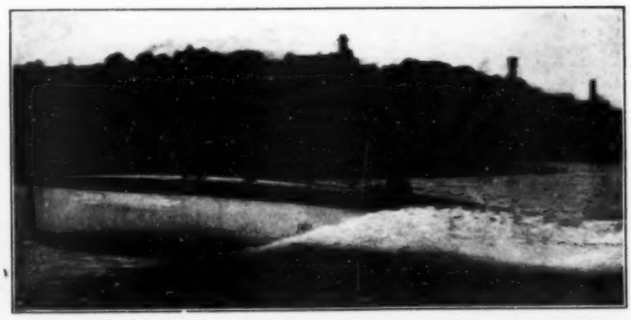


No. 72.—21 ft. runabout. Equal to brand new. Mahogany deck and transom, mahogany lazy backs, carries six. 30 H. P. Reliance motor. Bosch magneto, rear starter; speed 21 miles.

Please mention MOTOR BOATING.

No. 77.—New auto speed runabout, 21 x 4 ft. 6 in.; speed 18 miles; 20 H. P. Reliance motor; very high class; carries six; all appointments. Less than factory cost.

Please mention MOTOR BOATING.



No. 88.—Magnificent auto runabout; 25 ft.; brand new 40 H. P. Reliance-Continental motor; carries six; fully equipped; speed 24 miles; bargain.

Please mention MOTOR BOATING.

THE MOTOR BOATING MARKET PLACE

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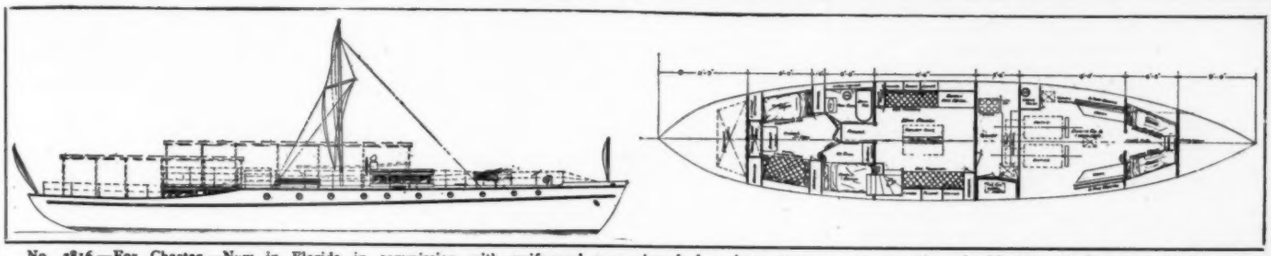
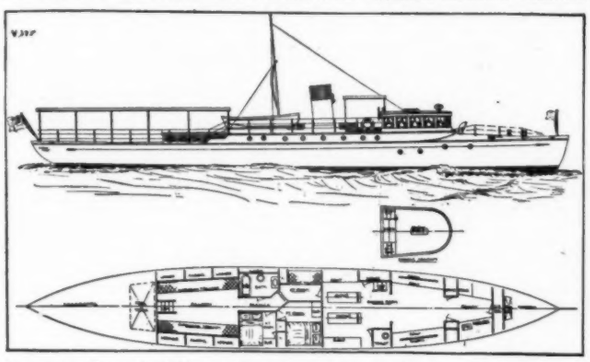
Cut one inch deep, one column wide..... $2
Cut 1¼ inches deep, 1⅝ column wide..... $3
Cut three inches deep, three columns wide.....$10

Opportunities for the Motor Boatman

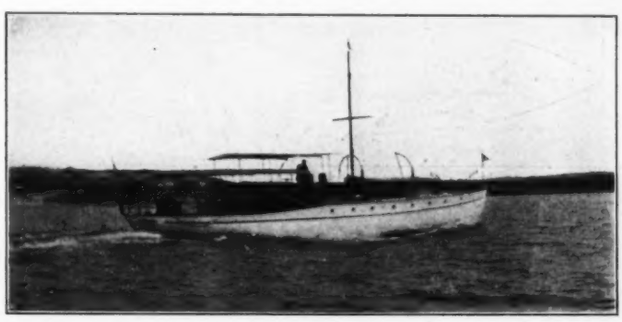
Before you buy or before you sell, examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.



No. 2816.—For Charter.—Now in Florida in commission with uniformed crew aboard, for winter season or any part thereof. Motor yacht, length 75 ft.; beam 17 ft.; draft 3 ft. Twin-screw. Electric light plant. Splendid condition. Excellent accommodations. Whittelsey & Whittelsey, 11 Broadway, New York.

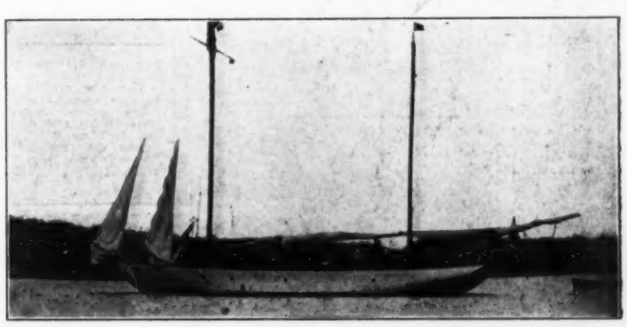


No. 2813.—Very desirable speedy motor yacht; 92 ft. x 12 ft.; twin-screw; Sterling motor; in commission.
Whittelsey & Whittelsey, 11 Broadway, New York.



No. 2667.—Sale.—One of the finest 65 footers built. An opportunity to obtain a splendid boat.
Whittelsey & Whittelsey, 11 Broadway, New York.

For Sale—Fast raised deck cruiser Gossoon, 36 ft. x 7 ft. 6 in. x 2 ft. 6 in. Equipped with six-cylinder, 4¾ in. x 5½ in. 1912 model Loew Victor engine, double ignition with Bosch magneto, Planhard carbureter. Engine is in perfect condition, is extremely quiet when running and has no vibration. Engine controls from cockpit, so that boat can be easily handled by one person. Accommodations consist of cabin, having full headroom, with two wide transom berths with large drawers under. Engine room amidships, contains galley with ice box, alcohol stove, sink with running water, and ample lockers. Pipe berth can be fitted in engine room. Toilet room forward with goblet Dolan w. c. and stationary wash basin. Hull built in best manner throughout with mahogany finish, is very strong and a fine sea boat. Gossoon is only one year old and is in perfect condition. Very well suited for use in Southern waters. Price reasonable. Located at Essington, Pa. Bowes & Mower, 517 Lafayette Building, Philadelphia, Pa.



NO. 3303.—For Sale at Bargain Price, or Charter.—Unusually desirable and able auxiliary ketch, built 1910; excellent condition. Adapted for cruising in Northern or Southern waters; 97 feet over all, 20 ft. beam, 5.6 ft. draught; flush deck with cockpit. Murray & Tregurtha 4-cylinder, 40-65 H.P. gasoline engine, giving a speed up to 8 miles. Equipped for cruising. Accommodations consist of two double, two single staterooms, two baths, one of which has a shower, saloon with transoms, sideboard, etc., engine room, galley, etc. Ratsey sails; 2 launches, 1 dinghy. Further particulars, plans and inspection permit from Gielow & Orr, 52 Broadway, New York.

Twin Screw Engines at a bargain. 1911 models in 8, 12 and 20 h.p., 2 and 3 cylinders, complete with magneto and reverse gears. Finest running 2-cycle on the market. Address Black Rock Machine Co., Bridgeport, Conn.

FOR SALE: Boat building and repair shop, fully equipped 24 x 76 ft. Marine Railway, good location, no opposition. For particulars address: Fletcher Boat Works, Houghton Mich.

---

8 CYLINDER 70 H.P. "V" TYPE ENGINE.
BRAND NEW.

Never left maker's hands. Suitable for aeroplane, auto, or Motor Boat use. Bosch Magneto, Schebler Carbureter. Weight, 300 lbs. Original price $1,500. Will take $600 cash. Quick sale.
A REAL BARGAIN.
RINEK CORDAGE COMPANY, EASTON, PA.

AUTOMOBILES.

AUTOMOBILE, Marine, Motorcycle Cylinders reground, new pistons and rings fitted. Makes engine equal to new. Write for particulars. Cast Iron Brazing Co., Manchester, N. H.

SPECIAL BARGAINS.

We have a number of brand new fully guaranteed 1912 models over and above our manufacturing schedule for this season. These will be disposed of at unusually attractive prices. Write at once for particulars as the supply is limited. We also have a few foreign makes accepted in trades. These motors have been carefully overhauled and are in first class running order.
3 cylinder, 4 x 4¼, 12-15 H. P. Barber $150.00
4 cylinder, 3½ x 5, 12-15 H. P. Sterling 178.00
THE ROBERTS MOTOR CO.
1501 Columbus Ave., Sandusky, Ohio.

"PATENT ATTORNEYS"—$10.00 each for the names and addresses of persons interested in patents. For particulars address Post Office Box 2343, Washington, D. C.

CYLINDERS REBORED—Pistons and rings fitted, new cranks, connecting rods, cases, transmissions, any part for automobile or motor boat motor reproduced like original. Gear cutting of all kinds and materials. Send old part. The shop of quality. McCadden Machine Works, Minneapolis, Minn.

ENGINES FOR SALE.

One TRUSCOTT four cylinder, heavy duty, 6 x 7, and one SPARKS four cylinder, medium duty, 6 x 6, rated 40 H. P. These engines have been replaced by lighter ones. We have completely overhauled them and now offer at bargain prices. SPARKS BOAT & ENGINE CO., Alton, Ill.

FOR SALE.

35 FT. ELCO EXPRESS, 1911, BUILT ENTIRELY OF MAHOGANY, COST LAST YEAR SOMETHING IN EXCESS OF $4,100; GUARANTEED SPEED 24 MILES; IN PERFECT CONDITION. PRICE $2,500 NET. ADDRESS
LAWRENCE JONES, LOUISVILLE, KY.

NEW 54 H. P., six-cylinder Elbridge engine, just from factory. Aluminum manifolds, base and cylinder heads, extra finish throughout. Built for Mr. Coleman du Pont of Wilmington, Del.; exchanged for a larger power. Price $700. Emerson Engine Co., Alexandria, Va.

WELDING.

Cracked Cylinders and all Broken Castings in any Metal SECURELY Welded and GUARANTEED at about one-half the cost of a new part. NATIONAL Welding & Mfg. Co., Incorporated, 527 Jackson Boulvd, Chicago, Ill.

CANADIANS, Second-hand engine bargains. Send for list. Guarantee Motor Company,
73 Bay Street, North, Hamilton, Ont., Canada.

USE "SNAPPER" ENGINES for your small boats. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

THE MOTOR BOATING MARKET PLACE

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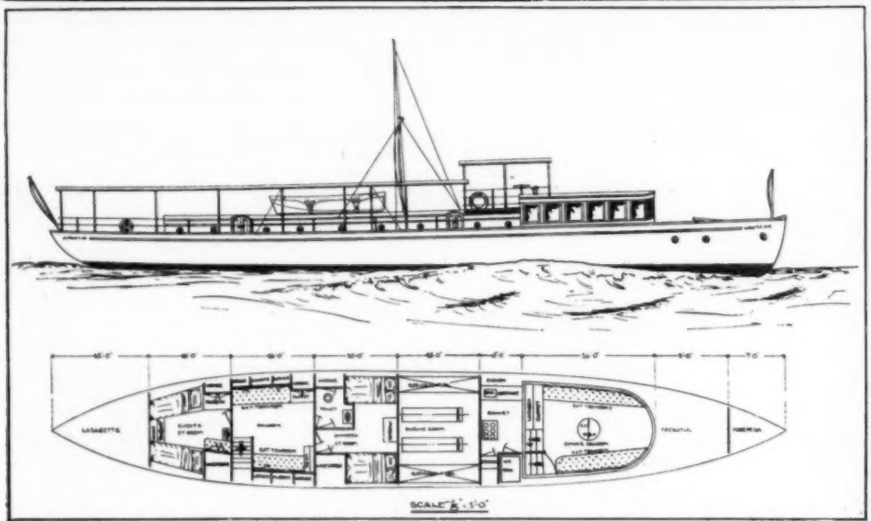
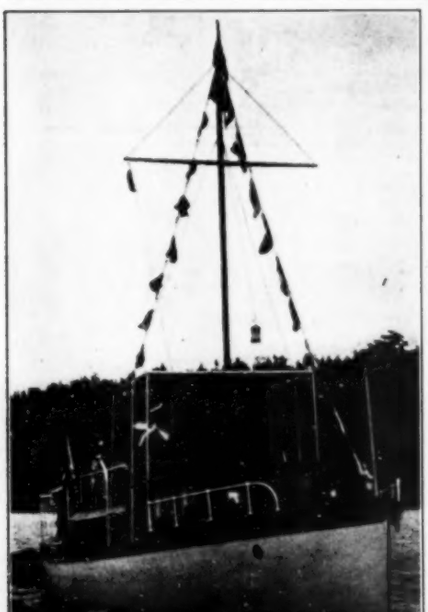


Bargain.—Very high class speedy cruising motor yacht, 90 ft. by 14 ft. by 4 ft.; twin screw; Craig motors; lighted and heated by electricity; 15 miles speed; built by Lawley, and unquestionably one of the best constructed and equipped yachts afloat; solid mahogany throughout; in very finest condition.
Cost $30,000. Offer of $16,000 refused last summer, but as owner now has larger yacht and is anxious to sell, will accept immediate offer.
Yacht should be seen to be appreciated. Plans and full information obtainable from Whittelsey & Whittelsey, 11 Broadway, telephone Rector 4718.



For Sale—Exceptional bargain. Attractive motor boat, 44 ft. long, 9 ft. 4 in. beam, 4 ft draft. Designed and built by L. A. Coombs at Belfast, Maine, in 1910. Equipped with a 1911 48 H. P. Syracuse motor which gives her a speed of over 11 miles an hour. Roomy cabin with one stateroom. Electric lights, tender and complete equipment. Cabin, stateroom, toilet room and pantry finished in white enamel; mahogany bridge. This boat can be purchased for the bargain price of $2,250, as owner wishes to build larger boat. She cost over $4,500, and is just as good as new. Inspectable at Bangor, Maine, by applying to Hollis Burgess Yacht Agency, 15 Exchange St., Boston, Mass.

FOR SALE.

Boat and engine works, with full line of machinery and equipment in excellent condition; for manufacture of boats and gasoline engines; buildings in first-class order; size nearly one hundred feet square, two stories, possessing excellent water-front on St. Lawrence River in vicinity of Thousand Islands.
Also complete patterns for high grade two-cycle gasoline motors in sizes ranging from 2 to 120 horse power, from one to six cylinders.
A large business has been conducted at this establishment and the reasons for selling are of a private nature.
This property will be offered at a great sacrifice.
Address all communications to Box 25, care of Motor Boating.

BROKEN PARTS WELDED EXPERTLY AND GUARANTEED.

Why risk sending your broken cylinders and crank-cases to inexperienced and irresponsible welders when you can get expert workmanship, prompt service, and fair prices from an old and responsible firm? Write us for estimates and look up our references. What good is a guarantee unless the firm behind it is reputable and responsible? We refer to Dun, Bradstreet, or any Waterbury bank. WATERBURY WELDING COMPANY, WATERBURY, CONN.

BEST STEEL HULL LAUNCHES.

We build the best zig-zag double riveted steel hulls on the river. Our own original model 30 ft. 16 gauge steel hull pleasure launch is simply a beauty. Finished in hard oiled oak with four cylinder 35 H. P. Northway engine with latest Remy magneto, easily makes 12 miles against and 20 miles with current per hour on Mississippi River. Price complete, without top, $500.00. Other sizes, too.
ROSEDALE MACHINE & SUPPLY CO.,
Rosedale, Miss.

ONE 20 H. P., one 35 H. P., one 40 H. P., one 45 H. P., four cylinder, four cycle engines. One two-cylinder, 30 H. P.; one three-cylinder, 45 H. P.; one four-cylinder, 60 H. P., two cycle engines, equipped with reverse gear and Safety Rear Starter mounted on extended base, "Remy" magneto, carburetor, propeller, bronze shaft, universal joint, spark plugs and wiring. Six Safety Rear Starters, with two adjustable standards, or bulkhead bearing, $7.00 each. Bill Ferguson, 422 Commercial St., Waterloo, Iowa.

SPECIAL BARGAIN.

23 x 5 Red cedar hull, good condition; 6 H. P. Grey engine; outfit used two seasons; complete, $125. Send for list of other bargains to "Sullivan Jeweler," Meredith, N.H.

FOR SALE—75 H. P. Simplex Automobile Co. marine motor, 4 cycle, equipped with Bosch high tension magneto and self starter; bargain. Address E. C. S., care Motor Boating.

UNDERSIGNED, highly responsible veteran sportsman, has started unique development at Lantana Point, south of Palm Beach, Fla. Fifty high-class sportsmen desired to investigate and buy lake-front lots with riparian rights. Thousands miles available all-year inland cruising; magnificent duck shooting, quail, big game; highest class development of property; ideal motor boat harbor; fine roads; delicious native oysters abound; good opportunity for club house. Full information with beautiful views on request. References exchanged. Prices moderate. Great enhancement. Geo. E. Andrews, Box 87, West Palm Beach, Fla.

FOR SALE.—45 ft. x 9 ft. x 3 ft. 8 in., torpedo stern cabin cruiser, flush deck. 30 H.P. 4 cyl. 4 cycle jump spark engine. 10 Light Dayton Dynamo and Storage Battery. Stove and cooking utensils with dishes. Toilet, anchors, cables and dink. Fully fitted for cruising, sleeps 4 inside. Two standing awnings; very fast; extra heavy construction; now in service; suitable for Florida cruising. Price $2,600. Ashley Halsey, Charleston, S. C.

FOR SALE CHEAP—
A 60 ft. cruiser, equipped with 40 H. P. Smalley high-speed engine, 4-cylinder, fast and strong; made of white cedar and copper fastened; will take care of 10 or 12 comfortably; six different rooms; main saloon 15 ft. long; toilet and wash room; engine room 10 x 11 ft; staterooms and pilot house. Apply to W. W. Moody, Cheaden, Va.

BARGAINS IN SECOND HAND ENGINES
that have been taken in exchange for new Palmers.

Two horse Mianus....	$20	Three horse Kennebec..	$30
Five horse Lozier.....	40	Six horse Knox.....	50
Two horse Detroit.....	24	Four horse Pierce.....	35

All of above have carburetors, oil cups and muffler.
EVERETT E. PALMER, 31 East 21st St., New York.

FOR SALE—One 10 H. P. Royal engine with carburetor, new, has never been used, $190.00. One three-cylinder Bridgeport motor, jump spark, Model E, 1910, 15-20 H. P., with carburetor, coil, reverse gear, shaft, propeller and stuffing box, all in good order, $190.00. Henry E. Keller, Boat Builder, Long Branch, New Jersey.

WANTED: Someone to back a speed marvel in motor boats. Plan has never been in use on motor boats before. No hydroplanes used. Plan is entirely original, and speed possibilities unlimited, with a minimum of power. If you mean business and have the resources, write to Navillus, Novinger, Mo. Box 218.

FOR SALE—A motor speed boat at a great sacrifice; cost $1,200; was offered for $600 first of season; will sell now for $350; open boat, 25 x 5; 30 H. P. engine; speed 20 miles per hour. Address G. V. P., care Motor Boating.

WANTED—Runabout, 25 to 40 o. a.; auto control; 18 m. p. h. speed, no less; 1911-12 model; the number of persons carried in comfort. Name maker of hull and engine, the lowest cash price. Box K, care of Motor Boating.

$780.—Handsome new mahogany cruiser, sleeps five, galley, toilet, upholstered; 30 H. P. engine, electric lighted. Complete, with $65 tender. See "Power Boating" for photo. Two first-class 50-60 ft. yachts building. Come see another complete now.
MODERN YACHT CO., BATH, ME.

WANTED.—Modern auxiliary yawl ketch or schooner, good speed, 30 to 40 ft. waterline; stateroom; not over 7 ft. draft; give designer, builder, name, inventory, price, arrangements, photo and all other particulars in first letter. Box 24, New York Athletic Club.

FOR SALE—35 x 10 x 3 ft. 6 in. cruiser, 10-14 H. P. 20th Century motor; Ketch rig; sails as auxiliary; launched 1911; guaranteed good as new; bargain; price $1,800; no offers. Address A. J. Hambrecht, 346 Broadway, New York City.

INSTRUCTION in motor boat gas engines given in a well-equipped school. A visit will convince you. Send for Booklet B. B. Y. M. C. A., 318 West 57th St., New York City.

FOR SALE—Completely equipped marine machine shop and motor boat supply business near New York City. Excellent opportunity for practical machinist. T. W. Flowers, 399 8th St., Brooklyn.

FOR SALE—28 foot launch; ⅞ in. cedar planking; mahogany decks and cabin; 10 H. P. Buffalo engine; speed better than 9½ knots; asking $750, will consider lower bids. S. A. Halsey, P. O. Box 1677, New York City.

BEARINGS
Ball and Roller—All Types
For American and Foreign Cars
and Motor Boats
Distributor of
"F. & S." "B. A. F." New Departure
Standard (S.R.B.)
Other Makes in Stock
Vixen Files
THE GWILLIAM COMPANY
Broadway and 58th St.
New York.

MOTOR BOATING'S circulation offers to advertisers the most concentrated buying power in the marine field. It is read every month by nearly one hundred and fifty thousand people who **should be** vitally interested in your product as motor boat owners, dealers, or manufacturers. Buyers of either of these classes can be reached more cheaply per thousand per month through MoToR BoatinG than by any other equally efficient medium of advertising. This economy of circulation is due to the fact that it is all of the one-hundred-per-cent kind. Every reader needs your goods and every reader can afford them or he would not be reading the foremost marine magazine. It is only for you to convince him by using space sufficient to attract his attention and to fittingly represent the quality and importance of your product.

Write for advertising rates to

J. S. HILDRETH
Adv. Mgr.

MoToR BoatinG

381 Fourth Avenue
NEW YORK

NAVAL ARCHITECTS & YACHT BROKERS

ARTHUR BINNEY
Successor to EDWARD BURGESS
NAVAL ARCHITECT AND YACHT BROKER
Mason Building, 70 Kilby St., Boston, Mass.
Agent for The Standard Marine Motor, The Commercial Acetylene Co. (Safety Storage System.)
TELEPHONES:
Office, 2702, Main. Residence, 3023-3, Brookline.
YACHT BROKERAGE DEPARTMENT:
Commission on Sales, 5 per Cent. Commission on Charters, 10 per Cent.

BOWES & MOWER
Naval Architects and Engineers
Yacht and Vessel Brokers
Offices, Lafayette Bldg., Chestnut and Fifth Streets
Bell Phone PHILADELPHIA, PA. Cable Bomo

BREESE & BREESE
Designers and Builders
Motor Boats and Gas Engines
HYDROPLANES
38 East 23rd St., New York City

EXCHANGE YOUR PRESENT ENGINE FOR A NEW ONE
Most liberal allowance made. We have over one hundred engines of all sizes on continuous exhibit. Send for Bargain list.
Bruns, Kimball & CO., Inc.
General Marine Agents and Yacht Brokers.
132 LIBERTY STREET NEW YORK CITY.
Over 2,000 yachts and launches for sale.

COX & STEVENS
Engineers and Naval Architects
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TELEPHONE 1375 BROAD

JAMES CRAIG
807-841 Garfield Ave. Jersey City, N. J.
Tel. 2237 Bergen.
DESIGNER AND CONSTRUCTOR OF MARINE GASOLINE ENGINES AND SPECIAL MECHANISMS, SEVEN TO THREE HUNDRED HORSEPOWER

C. W. ESTABROOK
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GASOLENE ENGINES
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112 Broad St., Boston, Mass.

GIELOW & ORR
Naval Architects, Engineers and Brokers
Marine Insurance
52 BROADWAY, NEW YORK, N. Y.
Telephone 4073 Broad
Plans, Specifications and Estimates furnished for all requirements
Descriptions and Photos submitted upon receipt of inquiry.

ORIGINAL "V-BOTTOM" MOTOR BOATS

PIUTE III—A notable 24' "Hand V-Bottom," which has made good on all waters. A real salt water sea boat, with speed and comfort.
YOU CAN BUILD ONE. THERE IS NO STEAM BENDING.
Send stamp for illustrated circular.
WM. H. HAND, JR., NAVAL ARCHITECT,
New Bedford, Mass.
I can also supply a limited number of complete boats built to order.

A Trip to Nowhere.

(*Continued from page 8.*)

Sitting on the spacious veranda of the Northport Yacht Clubhouse was a kindly-faced man in white ducks. We introduced ourselves and waited to see if the "exchange of courtesies" would happen. It did.

We had as good a time as Vice-Commodore Brown, who proved to be the "kindly-faced man," and other members of the Northport Yacht Club could give two total strangers.

That night we slept in a real bed in a hotel, after being wined and dined like a couple of Pearys returning from a North Pole expedition. Hats off to viceless Vice-Commodore Brown, and, as a certain well-known politician ejaculates occasionally, "He's just bully."

"Hank," said the chef the next day, as we finished waving a farewell to the Vice-Commodore, "let's make a long trip to-day, and let's get some other kind of fish."

Up to that time we had had a plentiful supply of snappers, flounders and eels, so we decided to journey across to the Norwalk Islands and try for blackfish.

The bay, which had been crowded with all kinds of motor craft the day before, was deserted and a haze hung over the water. This cleared later and we soon sighted the islands, which are almost opposite Eaton's Neck Light, and ran the Helen H. into a pretty cove with a rocky shore.

The chef just hated beans.

A ragged looking individual was on the beach poking at something and the chef, with a loud cry of "clams," leaped into the dinghy and rowed ashore. In half an hour we had a pailful of clams, not to mention fiddlers, which we particularly wanted, and sandworms.

Then we went blackfishing. In an hour we had caught five, all of them beauties.

"That's enough for supper," said the chef, and we started to row to the Helen H., from a mound of rocks where we had been fishing. Just as we started a gust of wind blew down from a bank of dark clouds in the west, which we hadn't noticed. We hadn't let out much anchor rope so before we reached the launch she had begun to drag and the race was on. The rain came down in sheets and, try as we could, we were not able to catch the Helen H., until she drifted so close to the shore that the anchor took hold. The chef grabbed the coaming and fell into the cockpit with a sigh of content.

"This is the first automatic boat I ever saw," he said; "I take off my hat to it. Only I wish we had a decent skipper."

We had nothing to say, but mentally vowed that hereafter we would never be caught skimping rope when we anchored. We decided to camp on Green Island, as the ragged fisherman we found on the beach called it. It was a good place, but in the morning the chef was so morose that we chided him about it.

"Homesick, that's what you are," we remarked, sarcastically; "you're the man who said, a few days ago, you wished the trip would last a month."

(*Continued on page 58.*)

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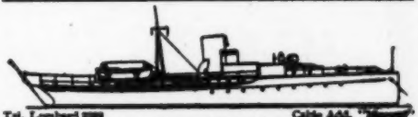

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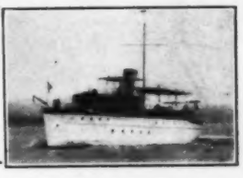

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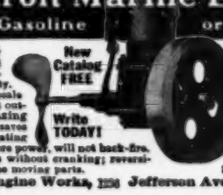

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A Trip to Nowhere.

(Continued from page 57.)

"You idiot," said the chef, "if you had any sense in that half-bald, ivory-studded cranium of yours you'd know what it was I wanted."

"What?"

"The beautiful white sand; the birds, the fish, the creek, the——"

"Lloyd's Neck!" we shouted enthusiastically, for we, too, had missed the bully place; "by gosh, we'll shoot back and spend our last night there."

And we did. Three hours later we were

There, with his whiskers wiggling in the matchlight, was a marsh rat.

scooting up that beloved creek singing and whistling like kids. Who could describe the glories of that Saturday. We fished, we swam, we ran races and we ate 'till we could eat no more. At 8 o'clock we lay down on our cots tired out, but supremely happy.

In the middle of the night we were rudely awakened by the chef.

"Hank," he said, huskily, and his face looked a yellowish green in the moonlight, "there's a snake in here."

We started to chuckle. We had heard that before.

"No; I'm right this time," said the chef.

We listened. First silence, then we heard a sound as if a long body was lifting itself up the logs, making a scratching noise. Two of the three hairs in the center of our bald spot stood erect, and we strained our eyes to peer into the gloom behind us.

Finally we struck a match and leaned over the head of our cot to look. There, perched up on one of the logs, with his whiskers wiggling in the match-light glare, was a marsh rat. No Olympic athlete in his glory ever made a leap like we did. Both of us landed outside on the sand at the same time. We gazed fearfully at the shack, and then at each other.

"It's only a rat," said the chef; "let's go back."

"What! And miss seeing this beautiful moon?" we replied. "Never; we're going to stay right here."

"I'll tell you what," said the chef, "we'll pull out the cots and sleep under the moon."

Sunday morning was spent packing up, stowing away and making the Helen H. look presentable. We ran back with a golden summer sun in our faces, brown as berries, hard as nails, and at peace with everything.

The End.

Standard Thermex

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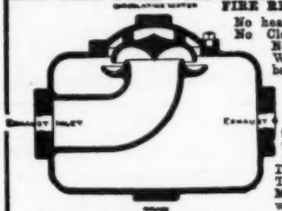

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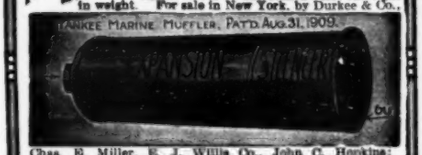

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The owner says:

"You are, of course, aware of the fact that Peter Pan V won the International Championship in the Hudson River Carnival at Yonkers, also the thirty-mile free-for-all in said Carnival. This boat was varnished with 'Valspar.' We have heretofore seen fit to recommend your 'Valspar.' We use it exclusively on all our high-speed boats with perfect satisfaction."

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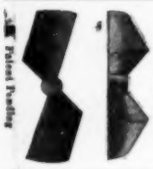
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Racing With Winter Through Dixie.

(*Continued from page 34*)

any other water he is likely to touch with his keel. We found a snug little harbor between two marsh islands, miles from a town or a road, but protected from all quarters.

Next day we followed the other cruisers out of the harbor and within an hour, to our great joy, had them all following us. Middleton anchorage was achieved and the hook dropped in shallow water to await the delightful process of rowing up a miniature brook three miles and returning exhaustedly with ten gallons of gasoline.

By this time night was approaching by leaps and bounds, and as Middleton anchorage is exposed from four sides, we sought a snugger harbor. We found it, and East Bluff harbor will live long in our memories because of one incident. It appeared to be entirely out of touch with all signs of civilization, and as soon as we saw it we dubbed it "Lonely Harbor." It was snug all right—a marsh island on one side; on the other, the mainland with its impenetrable forest. No railroad within sixty miles; no town or village within twenty; no road within ten. As the throb of the engine was stilled, and the sound of the anchor splash died away, we became conscious of the intense silence. Not a ripple disturbed the mirrored surface of the water and no wind sighed in the green boughs or through the rank marsh grass. No noise of oars in oarlocks or wheels on shore. The customary land sounds one welcomes after a day at sea were missing. No dogs barked; no children whistled. The silence was absolute; complete. Here we were alone, probably miles from another human soul, was the skipper's comment.

"Hark!" replied the chief, "what's that?"

The skipper cupped a hand to his ear to catch the faint call of a lonely whip-poor-will or stray loon—and the spell was shattered. For, to our astonished ears resounded untunefully and vociferously the words, "Oh, oh, oh, oh, you beautiful doll!" Right about facing, we saw a solitary fishing boat coming to anchor at least two miles away.

The following afternoon we spent in making up for lost time. The sail was set to help a little in the fair wind; a course was set for Neuse River Light, 31 miles distant, and we chugged away from Lonely Harbor. At the proper time the lighthouse jumped up dead ahead, filling our hearts with pride and satisfaction. We then devoted a couple of hours to prayerful entreaty to the gasoline gods—and won out, coming into the town of Oriental with a pint and a half of juice left. Replenishing our bunkers, we crossed Neuse River and ran up Adams Creek (guided by the freshly painted and numerous ranges), ran through the six-mile government cut to the head of Core Creek, eight miles from Beaufort.

Next morning we dropped down through innumerable oyster beds to the interesting North Carolina seaport, and found that we had beaten our companions of Roanoke to the harbor. We came to anchor about 10 A. M., flung out our colors and proceeded to wait for "weather." At Beaufort the inland route terminates for a while, and we made preparations for our 160-mile sea voyage.

To Nova Scotia and Back.

(*Continued from page 39*)

Mattituck with no lights on the breakwater. Again I sought comfort with the engine, and arose, stiff and cold at 5 A. M., turned the engine over, and had the boat tied up at the "Old Mill," Mattituck, at exactly 6 A. M.

"Otto" and his good wife certainly gave us a breakfast, and I was for spending the day and night there, but the rest wanted to see home and friends once again, so we started off at 10:30, taking a straight course for the Norwalk Islands.

We landed George, wet but happy, right at the little float where we had taken him aboard three and a half weeks before.

We stayed but a minute, and were at anchor off Farwell's Island, Port Chester, by 5 o'clock, safe, sound, and glad to get home.

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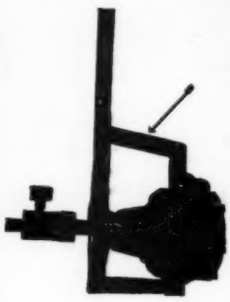
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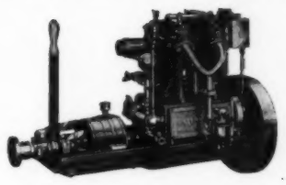

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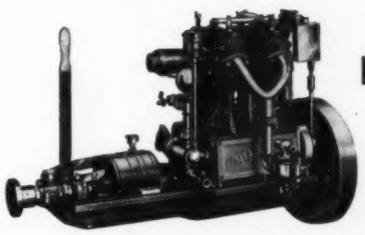

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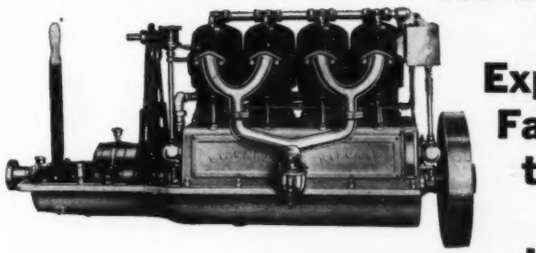

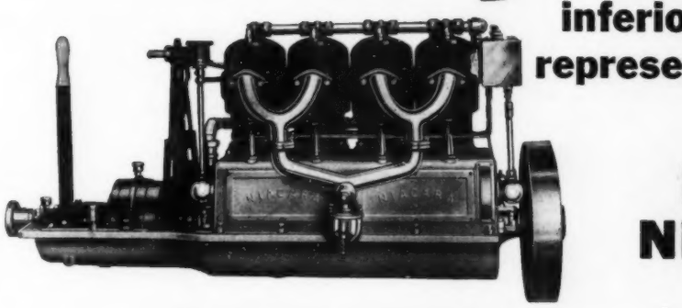

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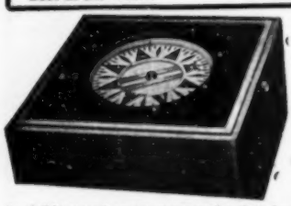

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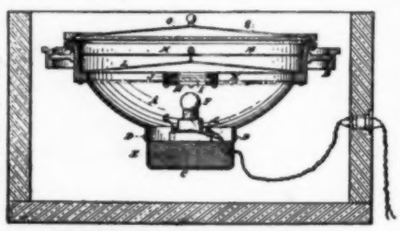

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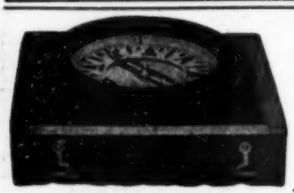

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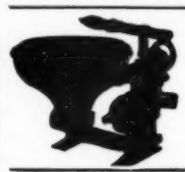

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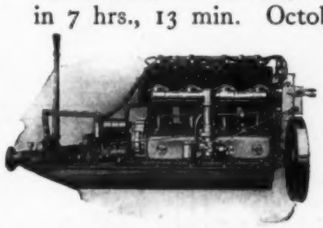

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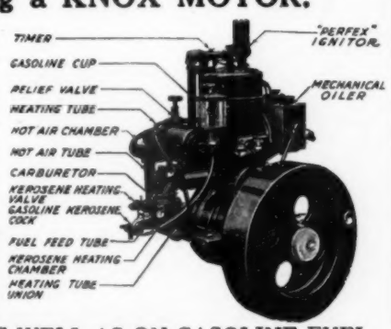

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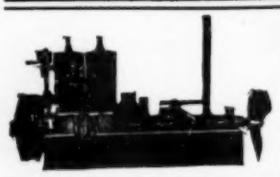

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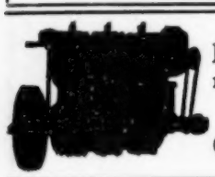

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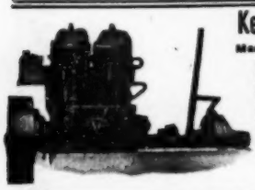

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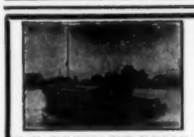

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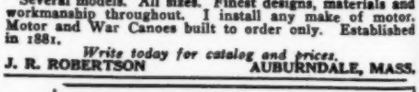

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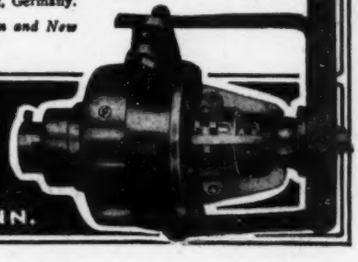

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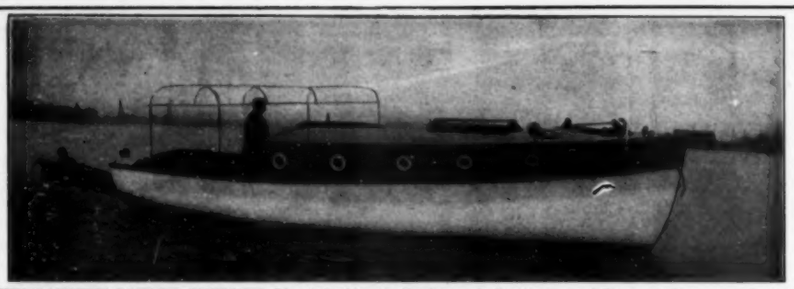

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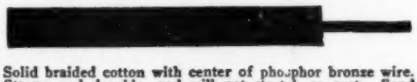

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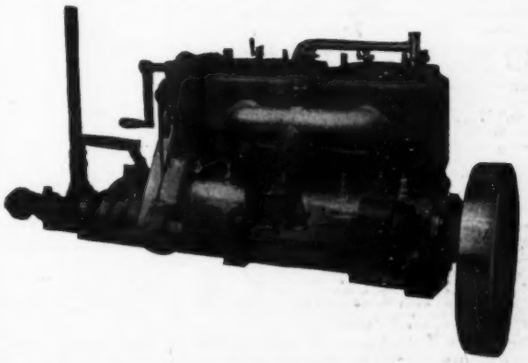

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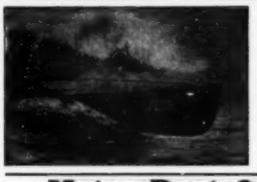

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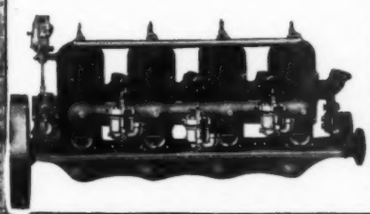

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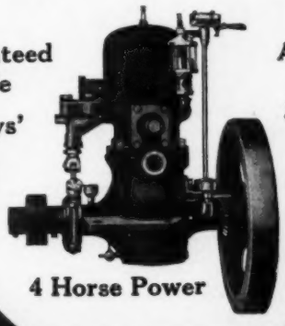

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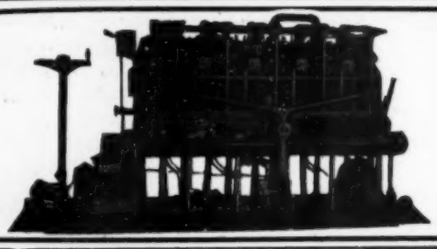

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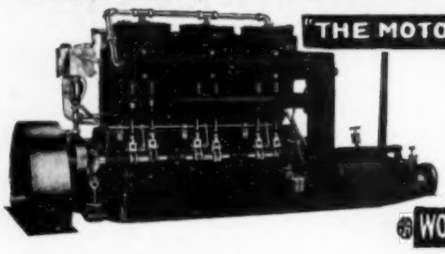

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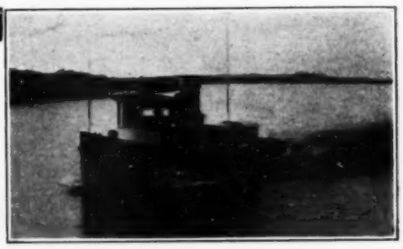

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Hollow aluminum ribs, strong flexible covering, non-corrosive air-valve and fasteners. Patented. Self-inflating on adjustment. Weighs 1½ lbs. Folds to 5 x 6 in. Rust, rot, acid and water proof. Practically indestructible. Assures perfect safety and comfort in water. Convenient to travellers and lovers of aquatic sports. Sold by manufacturer and marine and sporting goods dealers. Price $5. Highly illustrated booklet 10c.
AUTO-PNEUMATIC SWIMMING BELT, INC.,
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WHITE BOAT CEDAR

ALSO MAHOGANY AND WHITE OAK
All thicknesses and length stk stock for immediate shipment

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Tuttle Marine Motors

FOR EVERYTHING FROM A CANOE TO A CRUISER
18 Years' Experience. Unlimited Guarantee. Write for Catalog.
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IDEAL IGNITION

on your marine engine is the result of using Ideal Ignition Specialties. Ideal Spark Plugs, Porcelain, $1.00; Mica, $1.25. Ideal Side Acting Switch, $.50; Ideal Front Connected Switch, $.75. Write today for complete catalog.

IDEAL SWITCH CO., Inc., Plainville, Conn.

For SPEED, PLEASURE or WORKING BOATS

THE

Hyde Turbine Type Propellers

ARE UNEXCELLED

Why experiment when you can be sure of getting results by using a **HYDE?**

Control your engine from the steering stand with The Irish Pneumatic Clutch Control

Manufactured by

HYDE WINDLASS CO.
BATH, MAINE

Tie Up to This Gear

Of course, you need a reliable reverse gear, i. e., if you value your safety and the pleasure-giving possibilities of your boat.

The many good points of the "Baldridge" make it absolutely reliable. Here's one: The main shaft is *not* divided at the center. It extends entire length of gear. It can't get out of line—can't grind the bearings out.

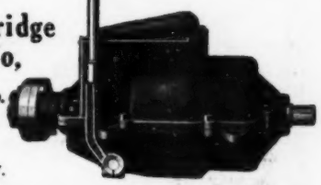
Baldridge Reverse Gear

Compare this with gears having shaft divided at center where it carries a heavy load. Just figure out for yourself what happens when the bearing begins to wear a little.

Thousands of "Baldridge" Gears in use prove the superior construction of "the gear to bear the wear and tear."

Be fair to yourself. Get all the "Baldridge" facts before you buy.

"The gear to bear the wear and tear"



The Baldridge Gear Co,

678 W. GRAND BLVD. DETROIT, MICH.

Export Office:
47 Broadway, N. Y.

The 1913 MODEL of the Pearl Gearless Reverse Clutch

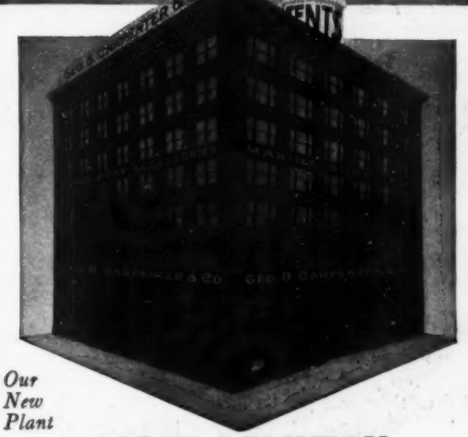
will be fully illustrated in the advertising section of the **February** 1913 issue of Motor Boating.

We have some scientific-explanatory literature ready, that will be sent to those interested in having an **absolutely noiseless GEARLESS REVERSE CLUTCH.**

Rollers and Cones determine H.P. 100% efficiency. Grips instantly and smoothly. Every Clutch guaranteed.

Responsible agents desired.

Pearl Machine Co.
220 West Elizabeth St., DETROIT, MICH.



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QUICK DELIVERY

IS A SURE RESULT OF

Central Location, Complete Stocks, Thorough Organization and a Modern Plant

This is a combination that enables us to reach promptly more boating centers than any other American supply house. We can save you hours, days and sometimes weeks of annoying and expensive delay. Send 20c to cover postage on our 550-page

Marine Supply Catalog, No. 101

Full of interesting information and attractive prices. Your 20c will be refunded on your first order. If you already have this catalog, send for our 1913 price list; ready soon, mailed free on request.

GEO·B·CARPENTER & CO

WELLS & MICHIGAN STS. CHICAGO.
"The Great Central Market"

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Propellers and Boat Hardware

The Biddle Propeller is the finest and fastest wheel known. Made of Monel Metal—the wonderful new metal that has the strength of steel, the lustre of silver and never rusts or corrodes.

Biddle Propellers are designed on scientific principles by the ablest naval architects. The blades are absolutely true to pitch and get the utmost out of every engine stroke.

Monel metal hardware outlasts any other material and defies corrosion. We furnish machine bolts, lag screws, wood screws, rivets, washers, boat nails, clinching nails, sheathing nails, etc.

Biddle Speed Wheel Showing Fairwater Nut and

Monel Metal tiller rope and guy rop never corrode or break. Monel Metal sheets are ideal for boat sheathing.

WRITE US FOR COMPLETE INFORMATION ON PROPELLERS AND HARDWARE

Biddle Hardware Co.
(Established 1837)
6th and Commerce Streets
Philadelphia, Pa.

150 Chambers Street
New York

Branch Offices:
London *Stockholm*
Montreal *Buffalo*

Monel Metal Machine Bolt

Monel Metal Lag Screw

Don't Row It— "EVINRUDE" IT.

WHEN the wind dies down, don't whistle for its return—don't *row* home either — just hang your Evinrude Motor over the stern of either the sail boat or its tender—and presto! You've made a motor boat. The

EVINRUDE DETACHABLE, PORTABLE ROW BOAT MOTOR

drives *any* rowboat eight to t n miles an hour; *always* goes—everywhere—in salt or fresh water; adjusts to the shallows and to the deep and it's weedless; carries like a satchel and is built as strong as tested steel and bronze can make it.

Details about it, and how it was adopted by four governments, is explained in the catalog. Write for it.

EVINRUDE MOTOR CO., 389 Walker St., MILWAUKEE, WIS.
Members of National Association of Engine and Boat Manufacturers.
NEW YORK SALESROOM 280 W. BROADWAY. Dept. F. F.

"VICTOR" CAPSTAN

Strong—Compact—Efficient

THE best and cheapest capstan on the market. You can stand up to work with a "Victor." Can be reversed, in a second, to revolve in opposite direction.

Write for sizes and prices.

Patented March 21, 1899

Manufactured by

Wilcox, Crittenden & Co., Inc.

Established 1847 Middletown, Conn.

BUILT BY WRIGHT **WEGO** ARROW

Build Your Own Boat

A money-saving recreation during your spare time. We offer you the latest designs and instructions originated by Mr. Chas. Hamilton, the famous naval architect, in the

New Type Auto Boats Complete and in the Knock-Down By the Unit Idea, Something New and Original in Boat Building.

If You Have the Time, It Will Be a Pleasure to Build Your Own Boat

Nothing is more interesting to the average professional or business man than a few hours each week spent in the workshop building a boat, studying the design, planning his work and watching the results of his efforts advancing into a pleasure craft in which he is to spend many hours of most exhilarating sport—Motor Boating.

Can a man who is not a mechanic build a boat? We say most emphatically that he can. Any man who can handle a hammer, use a screw driver and clamp, can build a boat by our perfect system of construction—and a good boat at that.

By building your boat the **"Wright Way"** you eliminate the builders' large profit, heavy selling expense and excessive freight charges. This means a saving to you of from 25% to 75%.

No Need of Flimsy Paper Patterns to Bewilder and Mystify you. We supply you with Boats in the Knock-Down, all machined and cut to fit and ready for you to reassemble. We supply you with every piece of material necessary to complete your boat.

Buy your Boat and Build it Yourself under the **"Wright Way which is the Hamilton Way"** and your boat will be a success at a very big saving in cost. We furnish boats in any stage of construction, either complete or in the knock-down. Write for new descriptive bulletin explaining **what you get mailed Free.**

C. T. Wright Engine Co.
200 State St., Greenville, Mich., U. S.

MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING

MoToR BoatinG's circulation offers to advertisers the most concentrated buying power in the marine field. It is read every month by nearly one hundred and fifty thousand people who *should be* vitally interested in your product, as motor boat owners, dealers or manufacturers.

Buyers of either of these classes can be reached more cheaply per thousand per month through MoToR BoatinG than by any other equally efficient medium of advertising. This economy of circulation is due to the fact that it is all of the one-hundred-per-cent. kind. Every reader needs your goods and every reader can afford them or he would not be reading the foremost marine magazine.

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Write for advertising rates to

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J. S. Hildreth, Advertising Manager
381 Fourth Ave., New York

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POWER LAUNCHES

Best value because a standardized product built in quantities by modern manufacturing methods. Write today for Catalog of our complete line including

18 ft. Spl., 3 H.P.	$200
21½ ft. Spl., 6 H.P. with gear	300
24 ft. Spl., 6 H.P. with gear	450
22 ft. Junior Runabout, 6 H.P. with gear	500
26 ft. Gentlemen's Mahogany Runabout, 11 H.P. with gear	775

The above and other models in stock for Immediate Delivery. We also build family launches, commercial boats, runabouts, cruisers and row-boats to order. **The Cleveland Auto Boat Manufacturing Co.,**
Dealers in principal cities.
1037 River Avenue, N. W., Cleveland, Ohio

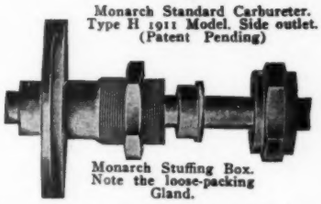
IF YOU REALLY

desire to get more power out of your engines equip them with Monarch Auxiliary Air Valves and Monarch Special Carbureters. A Monarch Pump Suction Connection and Strainer may save your engine or boat.

Monarch Pump Suction Connection and Strainer.

Monarch Standard Carbureter. Type H 1911 Model. Side outlet. (Patent Pending)

Monarch Auxiliary Air Valve. Will increase the power of your two-cycle engine.



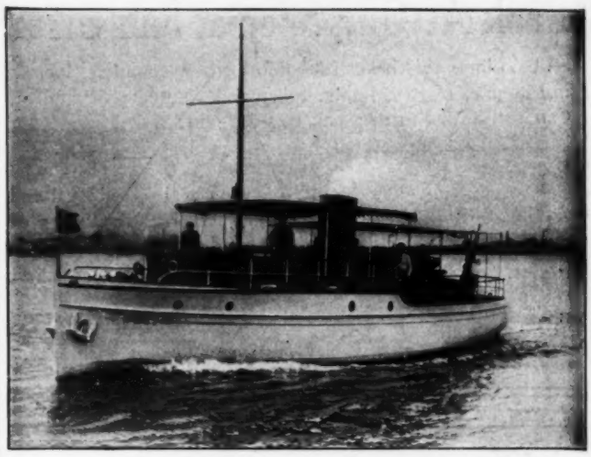
Monarch Stuffing Box. Note the loose-packing Gland.

Monarch Goods are Guaranteed, not for 30 days, but until they are worn out. Unless Vertical Carbureters are specified, all Carbureters are shipped Horizontal Pattern. Other Specialties offered from time to time. Full information for the asking.

MONARCH VALVE CO.

112 Front St., Brooklyn, N. Y., U. S. A.

Member { *National Association of Boat and Engine Builders* / *Marine Supplies Association of America*



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DISTINCTIVE TYPES

ELEGANCE COMFORT SEAWORTHINESS

BUILT FOR YOUR REQUIREMENTS

Plans and specifications which will embody exclusive features designed to meet your individual needs sent on request. Write to-day.

CRUISERS RUNABOUTS TENDERS

Niagara Motor Boat Co.

210 Sweeney Street North Tonawanda, N. Y.

A Marvel of Simplicity

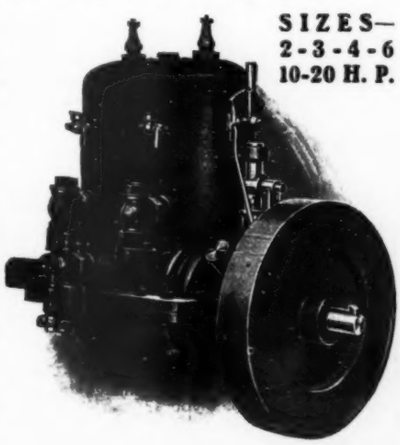
For its size and power this Northwestern Motor is the most compact and reliable engine ever put on the market. Cylinders are cast in one piece with water jacket surrounding both, thus insuring absolute alignment and even expansion from heat or cold, an item very troublesome where cylinders are cast separately and mounted on one base; the size of bore and stroke allows a very high speed with minimum amount of vibration. Engine can be used in a 20-foot boat, or will send a 35-foot hull at a good speed against a stiff stream.

Northwestern Marine Motor

10 H. P. 2 Cylinder

This has proven the most popular engine we make; is in use all over the world. Installed in U. S. Government lighthouse tenders, police patrol boats, pilot boats, etc., on account of its great reliability and durability. It is also used in a number of the fastest racers in the United States. Weight, 325 lbs. Speed, 600. Propeller, 18 inches.

SIZES—
2-3-4-6
10-20 H. P.



Save on your marine motor this year. Get free catalog that fully describes Northwestern Motors.

Northwestern Steel & Iron Works

301 Spring Street, Eau Claire, Wis.

Packard CABLE

—for—

Electric Lighting and Starting Systems

MAKES GOOD WITH A VENGEANCE

—as does also—

Our Famous Ignition Cable

Equally Good for Boat and Auto Service

Complete Stock for Immediate Shipments

Our Wire Awaits Your Wire

Absolute Satisfaction Guaranteed

The Packard Electric Company

322 Dana Avenue WARREN, OHIO

Look At Our Special Fall Offer

$850.00 buys this beautiful cabin cruiser, complete, including engine, electric lights, toilet and complete equipment. Can you afford to overlook this bargain?

We are also the oldest and largest manufacturers of K.D. frames of every description.

Write for catalog to-day.

Pioneer Boat & Pattern Co., Wharf No. 2, Bay City, Mich.

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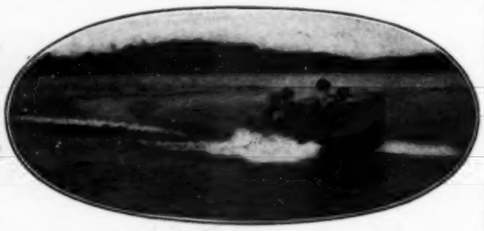
13 Foot Hydroplane BUMBLE BEE

Complete with Double Cylinder Engine $325.00

K. D. Frame $27.00



SPECIFICATIONS.

Cedar planked, copper fastened, mahogany trimmed, brass fittings, auto-control steerer, double cylinder high-grade engine, fully guaranteed.

CAN YOU BEAT THIS?

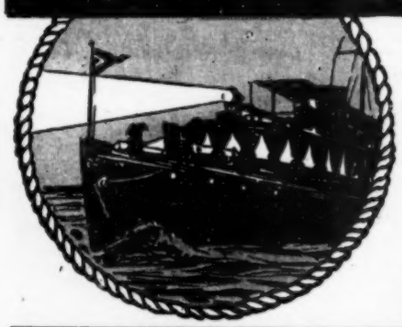
Particulars on other sizes and types on application. Either complete or in the knockdown.

Catalog G

BATH MARINE CONSTRUCTION CO. :: Bath, Me.

Remember we are the originators of the famous BATH V BOATS.

Dayton Launch Lighting Outfits



A Dayton 8-light outfit crossed the Atlantic in the motor yacht Detroit. Capt. Day says: "From the time we left we never had the slightest difficulty. Your lights were lights that never failed." Ample current for ignition always available.

The Dayton Electrical Mfg. Co.

Largest Manufacturers of Ignition and Lighting Apparatus Exclusively in the U. S.

186 St. Clair Street, Dayton, Ohio

CURTISS MOTOR-BOAT WATER CLOSET

We built this Motor-Boat Water Closet after carefully considering the designs and requirements of small cruising boats and the demand for a low-priced fixture, suitable for above or below water-line use.

When installed above the water line it only requires a sea-valve on suction pipe. Its simplicity and ease of installation enable anyone to install it.

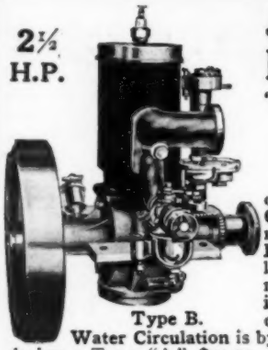
$20

Patent Pending

Manufactured Solely by

THE J. H. CURTISS CO., 2 South Street, N. Y.

2½ H.P.



Type B.

Just What You've Been Looking For

"The best that money and brains can produce."

$39.50

SPECIFICATIONS—**Cylinders** of special fine-grained grey iron. **Crank Shafts** of high grade hammer steel forging, heat treated. **Pistons** have extra length to insure long life, they are fitted with three rings, all carefully ground. **Bearings** are of genuine babbitt, except connecting rod, which is bronze. **Water Circulation** is by a bronze rotary pump of our own design. Type "A," $39.50; Type "B," 3 horsepower, $49.50. Send for Catalogue.

DE LONG ENGINE CO. 83 North Ave., Webster, N. Y.

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Send TODAY for Catalog "A" Containing Valuable Information About Modern Lighting Plants.

We have equipped some of the finest power boats, yachts and launches afloat with Direct Connected Generating Sets. All leading ship and launch builders use them, because they are unequaled in brilliant, dependable service.

Searchlights in designs from 7 in. to 60 in. diameter.

Let us tell you about our big line:

The Carlisle & Finch Co.

261 East Clifton Avenue

CINCINNATI, • • OHIO

Sell Your Motor Boat or Motor in the MoToR BoatinG Market Place

Motor Boating has a guaranteed circulation in excess of 25,000 copies per issue, and every copy is seen by several persons. Practically every motor boat enthusiast in the country is reached, as well as the principal foreign markets. In this great audience there are sure to be several prospective customers for every article you want to sell.

We will write your advertisement if you will send full information and tell the amount of space you wish used. Enclose remittance to cover size of advertisement you want, figuring at rate of 3 cents per word, each insertion.

MAIL YOUR ADVERTISEMENT TODAY.

MoToR BoatinG

J. S. HILDRETH, Adv. Mgr., 381 Fourth Ave., New York

"The Greatest Business Getting Show of the Country"

: : : TENTH ANNUAL : : :

BOSTON MOTOR BOAT AND ENGINE SHOW

MECHANICS' BUILDING, BOSTON

February 1st to 8th (inclusive) 1913

THE BOSTON SHOW IS THE SHOW. It covers the biggest and richest marine market in the country. The entire Atlantic Coast trade and the rivers and lakes of New England are reached most effectively by exhibiting at this show.

The 1913 Show is going to be bigger and better than ever before. All arrangements are completed and many reservations are already in. **Is yours?**

No manufacturer who sells his product in New England—or wants to—can afford to stay out. The only economical way to meet, face to face, the thousands of boat owners and marine dealers in Boston and New England.

If You Want a Good Location Reserve Space Today

Personal Direction Chester I. Campbell; Executive Offices 5 Park Square, Boston, Mass.

MAN OVERBOARD

FOR COMFORT AND SAFETY in the boat use a KENYON Life Preserver Pillow, examined and O.K.'d by Government Steamboat Inspectors. Colors: tan, green or red. For sale by sporting goods dealers everywhere, or prepaid to you on receipt of price ($1.50) and your dealer's name.

Kenyon

DEALERS—Make your store a life-saving station—STOCK UP!

THE R. L. KENYON CO.

167 Meadow St. Waukesha, Wis.

Mosler SpitFire PLUGS

Increase your power 10%-by actual test

A. R. MOSLER & CO.,

P.O. BOX "M" MT. VERNON, N.Y.

1912 Annual Catalog No. 22

Our 1912 Catalog, the Largest and Most Complete Catalog of the kind, containing 256 pages, is Now Ready For Distribution. The Circulation is Limited to ONE HUNDRED THOUSAND Copies. It will be mailed to ANY ONE ON REQUEST.

Cut Prices

Concerns that offer Large Discounts make it their practice to INFLATE LIST PRICES and then offer Large Discounts, which are somewhat misleading. We have seen a catalog in which a certain spark plug is illustrated, "PRICE $2.50, OUR PRICE, $1.00 while THE STANDARD LIST or RETAIL PRICE for the same spark plug as illustrated in Our Catalog and advertised by the manufacturers is $1.00 each. Their CUT PRICE Therefore Is Not Lower Than OUR LIST PRICE.

DON'T BE DECEIVED

By Large Discounts Quoted from Inflated List Prices

ORDER FROM OUR NEAREST BRANCH

The Largest Auto Supply House In America

CHAS. E. MILLER, Manufacturer, Jobber, Exporter and Importer

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BOAT FITTINGS & SUPPLIES

MARINE HARDWARE

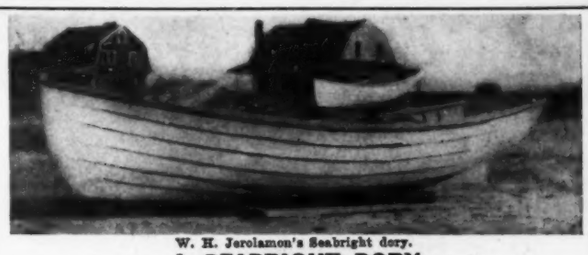
We manufacture and carry in stock everything to equip boats. Get our catalogue, free, and compare our prices with others. Goods guaranteed.

OSHKOSH METAL PRODUCTS CO

Drop us a card and get our catalogue by return mail.

If you don't buy of us, we both lose.

OSHKOSH, WIS.



W. H. Jerolamon's Seabright dory.

A SEABRIGHT DORY

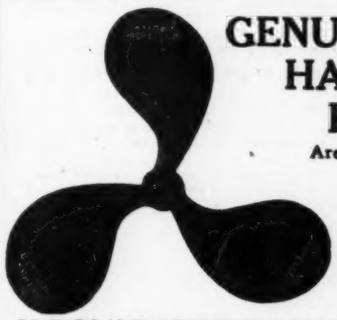
Willard H. Jerolamon, of Galilee, N. J., is specializing on a 20 ft. x 5 ft. 8 in. Seabright dory, which is copper fastened and brass screwed throughout. The planking is of ⅝ in. cedar in long lengths and the framing is of white oak throughout. The boat is finished with three coats of paint and is sold complete with a 5 h. p. Hartford motor for $310.

Willard H. Jerolamon

One of the oldest boat building establishments on the New Jersey coast. Established 1880.

DESIGNER AND BUILDER OF LAUNCHES, KNOCKABOUTS, Row Boats, Sail Boats, Seabright Skiffs and Ocean Pound Fishing Boats. Gasoline Engines Installed. Boats Stored.

P. O. STATION A, LONG BRANCH, GALILEE, N. J.



GENUINE HARTHAN PROPELLERS

Are unexcelled for

SPEED

CRUISING

TOWING

Write for Particulars

McFARLAND FOUNDRY & MACHINE CO. 1 BREUNIG AVE., TRENTON, N. J.

REPRESENTATIVES:

BOSTON: The Lincoln-Dillaway Co., 178 Commercial St.

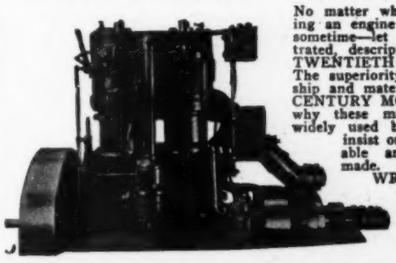
NEW YORK: Topping Brothers, 122 Chambers St.

PHILADELPHIA: F. Vanderbercken's Sons, 7 North Water St.

PORTLAND, OREGON: The Rober Machinery Co.

Twentieth Century MOTORS

12 TO 300 HORSEPOWER
2 TO 6 CYLINDER

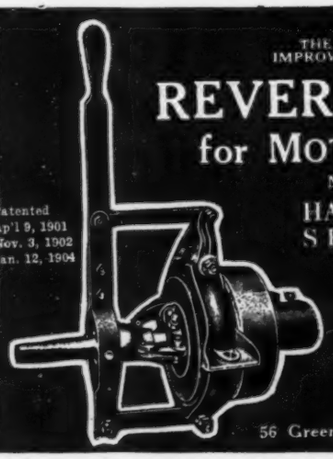


No matter whether you intend buying an engine now or not—you *will* sometime—let us send you our illustrated, descriptive, price-catalogue of TWENTIETH CENTURY MOTORS. The superiority of design, workmanship and materials in TWENTIETH CENTURY MOTORS are the reason why these marine engines are so widely used by motor-boatmen who insist on having the most durable and dependable motor made.

WRITE TODAY FOR CATALOGUE

New York Yacht, Launch & Engine Company

Morris Hts., N.Y.



Patented
Ap'l 9, 1901
Nov. 3, 1902
Jan. 12, 1904

THE IMPROVED BALL

REVERSE GEAR for MOTOR BOATS

Made only of

HARDENED STEEL SPUR GEARS

Most Reliable
Highest Grade
Easiest to Install

Four Sizes Carried In Stock
Send For Catalog

New York Gear Works

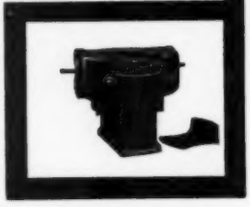
56 Greenpoint Ave., Brooklyn, N. Y.

BROKEN PARTS WELDED

We weld cracked cylinders and crank cases—make them as good as new. All repairs made within twenty-four hours after part reaches our shops. Illustration shows cylinder on which we saved the Consolidated Motor Company of Bridgeport, Conn. $30.00.

Scored Cylinders a Specialty

By a special process we repair cylinders scored from a loose wrist pin. Bore is not enlarged—your old piston and rings will fit repaired cylinder Our charge, on cylinders up to 6" bore, $12.00.



Where cylinder is worn or scored in many places from lack of oil, so that our special process does not apply, we can re-grind the cylinder absolutely round and fit new piston and rings. Repaired cylinder will have same compression and motor the same power as when new. Charges according to size of bore Always send one piston with the cylinders.

Write for booklet and full information

GUARANTEE:—If within one year from date of repair, part is found unsatisfactory, ship back at our expense (by freight collect). Upon examination, we will refund all charges or, if you prefer, do the work over without extra charge.

WATERBURY WELDING COMPANY
1148-B SO. MAIN STREET, WATERBURY, CONN.

ANDERSON GLASS AND STEEL SPARK-PLUG

A WINDOW to the Engine

Glass and steel welded into one solid integral body makes the Anderson absolutely the strongest and most enduring plug on the market.

Better pay $1.50 once than a dollar a dozen times. That's about the ratio of Anderson Spark Plug life, compared with ordinary plugs.

ALL SIZES

ANDERSON SPARK PLUG CO.
206 North Holliday Street Baltimore, Md.

DUNPHY KNOCK-DOWN FRAMES

Expert or novice, you can build as good a boat as the best on the market, provided you get the right kind of material properly constructed and fitted together. Dunphy knock-down boats and frames are different from the ordinary—better in design, more choice in material, easier to put together. Every knock-down boat or frame is set up in our shop before shipment. No guess work. Each rib is bent in its exact position over a solid form. Complete set of detail drawings and instructions with each frame.

Write for our catalog and compare our specifications.

A full line of complete Launches, Row Boats and Canoes carried in stock.

Dunphy Boat Mfg. Co., 105 1st Ave., Eau Claire, Wis.

Jencick

1912 Models

are simply further proof of the undisputed fact that

QUALITY COUNTS

Quality of Design *Quality of Materials*
Quality af Workmanship *Quality of Service*

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Let Us Tell You All About Motor Boat Fires

In every motor boat there is constant danger of fire. This type of fire is so difficult to get at and so menacing to occupants of the boat, who may be miles from shore and at the mercy of the sea, that only one extinguisher has been devised which affords real protection. This extinguisher is PYRENE. Let us tell you all about motor boat fires.

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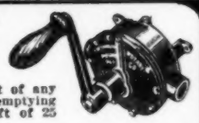
To Keep Your Boat Dry And Comfortable

Get a TRIMOUNT

Rotary Hand Bilge Pump



The handiest thing imaginable to have about a boat of any size. Not only for bilge bailing, but for filling and emptying bath tubs, washing down decks, etc. Has suction lift of 25 ft. and develops 30 lbs. pressure with nozzle.

This pump works so easily a child can operate it without tiring. Takes almost no room, fastened to bulkhead or anywhere else. Made entirely of bronze and never wears out.

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This 6 H. P. 1913 Toledo, $94

With Wico self-contained Sparking Device

STORM—RAIN—SPRAY—have no effect on the working of this outfit. No batteries, no coils, no timer, no complicated wiring. Simple and compact, delivers a hot spark every revolution without fail. Just as hot a spark when motor is turned over by hand as when running at high speed.

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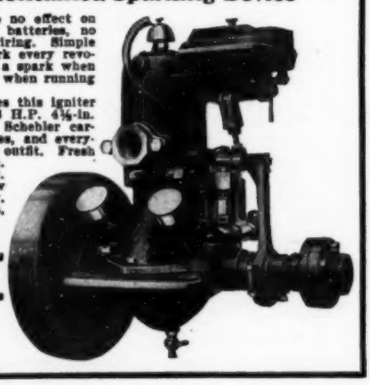

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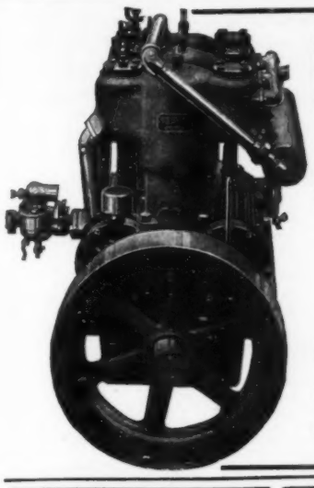

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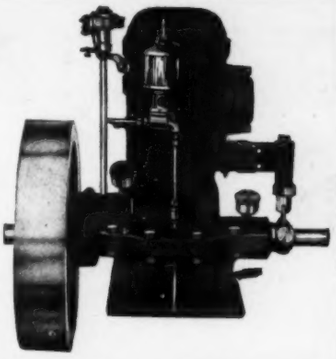

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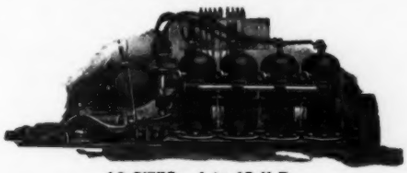

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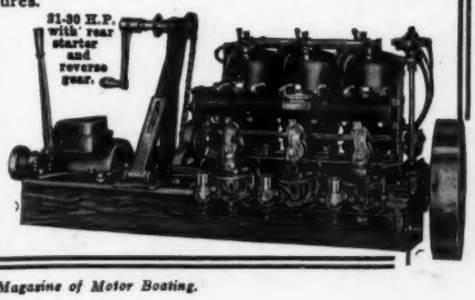

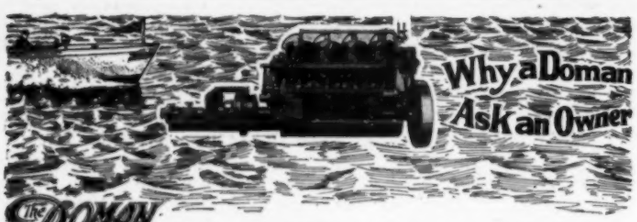

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RESULTS ARE PROOF OF POWER. NOTE SOME ERD RESULTS.

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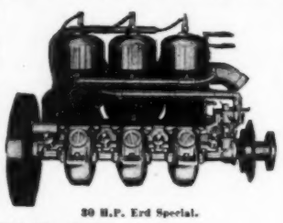
If you are interested in Motors which develop extraordinary H.P. and at the same time are DEPENDABLE, and will give you years of SERVICE investigate the ERD LINE of MOTORS.



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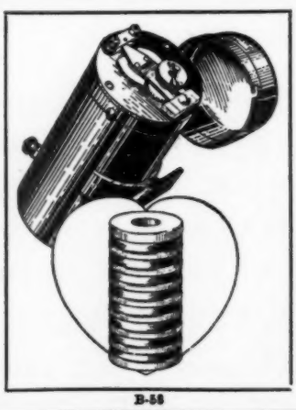

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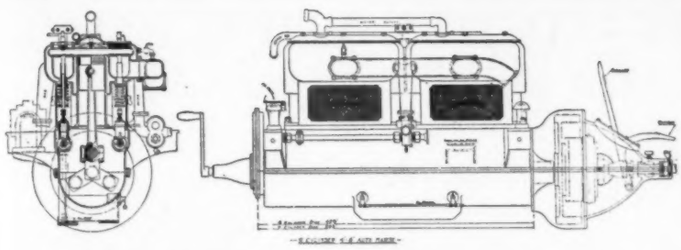

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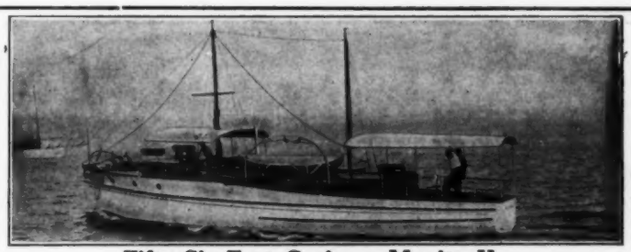

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This is a heavily built sea going cruiser with 12½ ft. beam. Mr. Heyward writes, "I am well pleased with Manito II and expect to get a lot of fun and satisfaction out of her."

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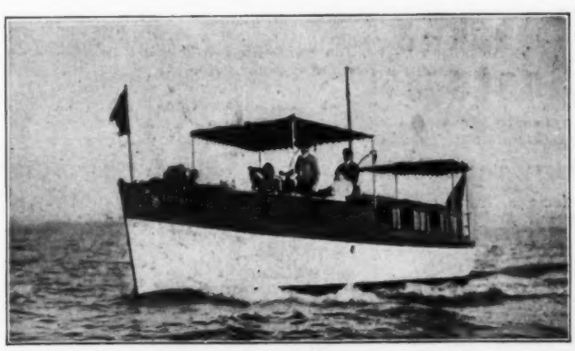

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Remember, we are one of the oldest and largest in the marine business, it is our specialty, and we are building up our reputation on the good results of our goods. Let's have your orders. Meanwhile send for our large free catalog.

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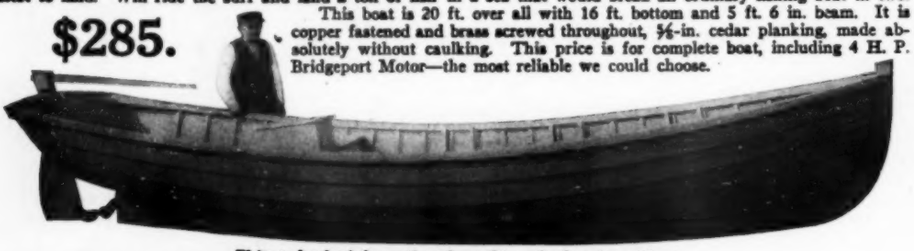
This boat is 20 ft. over all with 16 ft. bottom and 5 ft. 6 in. beam. It is copper fastened and brass screwed throughout, ⅝-in. cedar planking, made absolutely without caulking. This price is for complete boat, including 4 H. P. Bridgeport Motor—the most reliable we could choose.



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Immediate Delivery.

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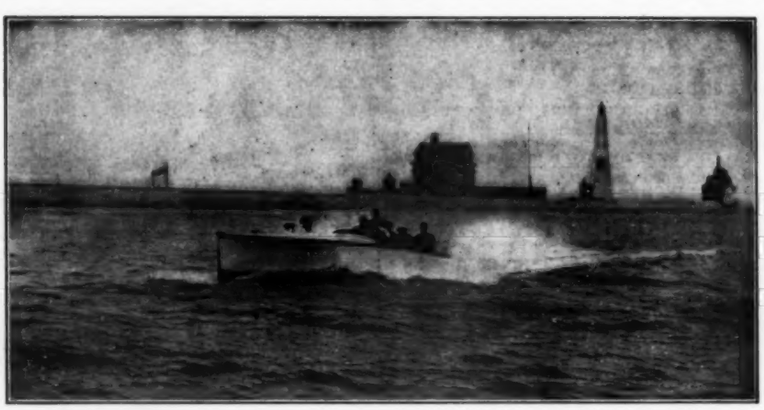

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VALLEY V-BOTTOM BOATS

THREE NEW ONES

22 ft. long by 4 ft. 6 in. beam
18 ft. long by 4 ft. 6 in. beam
17 ft. long by 3 ft. 10 in. beam

Refined boats built to give Service—Satisfaction—Speed.
Built to Stand Rough Water and Rough Usage.

Write and tell us what you want, or better yet, come and see our complete and up-to-date plant.

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22 ft. x 4 ft. 6 in. Valley V-Bottom Runabout Running in Ice Water, Dec. 3, 1912.

27 Miles Per Hour Guaranteed, $750

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"Would say this is my first expense (25c) for a new part or repairs in four years' steady running of your 'Smalley' engine, with which I am highly pleased." WM. P. ANDERSON, Hackensack, N. J.

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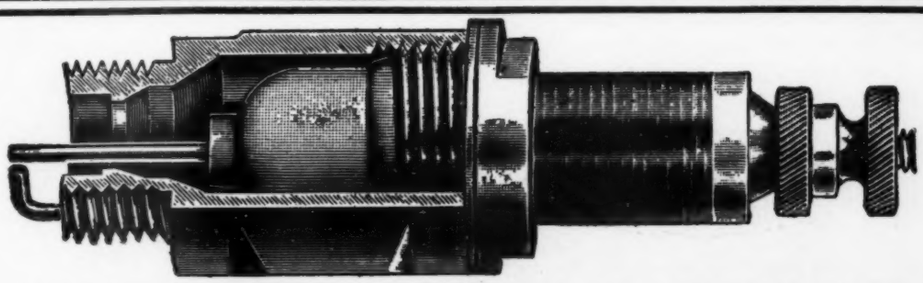

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The Canadian Fairbanks-Morse Company, Limited

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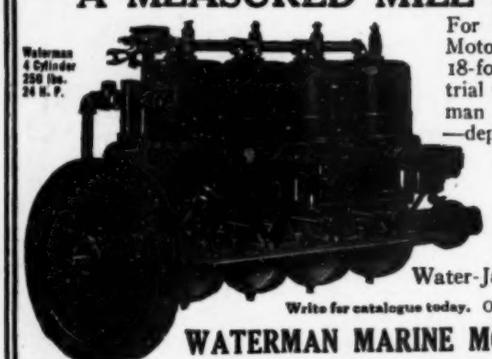
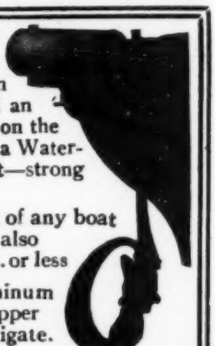




For small hydroplanes and Hand V-bottom boats, a Waterman Motor is just the thing. One of our customers has just launched an 18-footer, equipped with our B-2 (only 10 to 12 horsepower) and on the trial trip went over a measured mile in three minutes flat. There is a Waterman Marine Motor for every purpose—guaranteed for life. Light—strong—dependable—smooth-running.

The "Porto"—Two in One makes a motor boat of any boat in five minutes and also "makes good" ashore, running any machine requiring 2 h.p. or less

Waterman Speed Motors are made with Aluminum Crank Cases, Copper Water-Jackets and all other high-grade features. Don't fail to investigate.

Write for catalogue today. Our concise, fully illustrated book of Marine Engine value will be mailed on request, free. Send for it now.

WATERMAN MARINE MOTOR CO., 1531 Fort Street, W., Detroit, Mich.

THE JOHNSON MARINE REVERSE GEAR

IN A NEW TYPE FOR 1913, FROM 1 TO 40 H. P.

COMPACT AND NEAT

ENCASED BUT ACCESSIBLE

TELLS THE STORY

SILENT AND POWERFUL

JOHNSON AND QUALITY

Guaranteed for ONE YEAR

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

The Propeller You Need for Your Motor Boat is the COLUMBIAN

HERE IS THE PROOF

The "ALLEGRO," the largest motor yacht afloat, with three 150-H. P. engines, increased her speed 1 knot by installing COLUMBIAN PROPELLERS.

"BABY RELIANCE II," the fastest boat in the world, built by the Smith-Ryan Engine Company, made her World's Record of 49 miles an hour with the COLUMBIAN PROPELLER.

There is a COLUMBIAN PROPELLER for every Class of Craft—for *speed, steadiness, towing power* and economy in fuel, and wear and tear.

Every boat owner should have our illustrated booklet, **"PROPELLERS IN A NUT SHELL;"** it contains lots of interesting and valuable information.

We also make Manganese Bronze Struts, Rudders and other Accessories of distinctive merit.

COLUMBIAN BRASS FOUNDRY, 218 N. Main St., Freeport, Long Island, N. Y.

Largest Manufacturers of Propellers in the World.

Announcement of New Model

The Scripps Motor Company Announces the addition of a New Small 4-cylinder, 4-cycle Motor Known as "The Scripps Midget."

A special high grade, 4-cylinder, 4-cycle, 7 horsepower motor for tenders and other boats up to 20 feet.

Cylinders, 2¾x3½, cast in pairs, enclosed valves, vanadium steel crank shaft, babbitt lined bronze bushings, mechanical oiler, Bosch Magneto, aluminum sand blasted crank case, fine dull finished cylinders, brass and nickel plated fittings, weight 150 to 200 pounds.

Exceedingly flexible, well balanced and just light enough, this is the smallest practical, high-grade marine motor that has ever been offered to the trade.

A positive power-producing unit for particular people.

Send for literature and catalogue.

THE SCRIPPS COMPLETE MARINE POWER PLANT

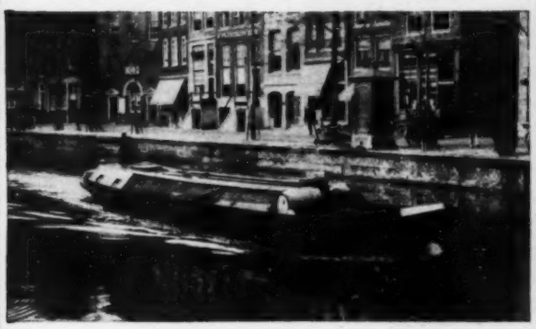
Made in 1, 2, 4 and 6-cylinder sizes, 4 to 96 H. P.

SCRIPPS MOTOR COMPANY
651 Lincoln Avenue
DETROIT MICHIGAN

Scripps motors are carried in stock by

New York.....Bowler, Holmes & Hecker Co., 141 Liberty St.
Boston.....Walter H. Moreton, 218 State St.
Philadelphia.....W. E. Cochenaur, 631 Arch St.
Jacksonville, Fla.....Gibbs Gas Engine Co., Foot of Main St.
Seattle, Wash.....S. V. B. Miller, 72 Marion St.
San Francisco, Cal.,
California Gas Engine & Motor Boat Co., 76 Clementina St.
Los Angeles, Cal.....Marine Engine & Supply Co., 121 E. 6th St.
Duluth, Minn.....Kelley Hardware Co., 118-120 W. Superior St.
Toronto, Ont.....Schofield-Holden Machine Co., 2 Carlow Ave.

MORE REAL SERVICE



In recent issues of the various Journals we showed you a fifty-two foot coal barge equipped with a 10 H. P. Roberts.

Here is another such barge loaded with 13 tons of merchandise. Her little 10 H. P. Roberts, which weighs only 260 lbs., is giving more service than could be expected. Think of it!

A 13-TON boat being propelled day in and day out by this little parcel of concentrated power!

Which all goes to show beyond possibility of a doubt that

Roberts REFINED MARINE Motors
"THE MOTORS THAT NEVER BACKFIRE"

are built for real service and give it.

Beyond this remember that Roberts Motors are honest money values—not the cheapest—but a good sound investment.

Plenty of models so you may choose to suit your boat and your purse.

Better send for a catalog while you think of it.

Some territory still open for live agents—ask about it.

THE ROBERTS MOTOR CO.
1501 COLUMBUS AVE. SANDUSKY, OHIO

EDISON BSCO PRIMARY BATTERY

The Standard Closed Circuit Cell

Complete Edison-BSCO Renewal

IN furnishing ignition for internal combustion motors Edison Primary Battery occupies a position peculiarly its own.

There is a class of gas engine users that demand a simple and reliable sparking system at a reasonable price. It is to these people that the Edison outfit appeals.

There are numerous types of cells sold for sparking purposes, many of which are not suitable for the service and although such cells are usually easy to renew, the frequent failure of current supply, due to their short life, renders them anything but satisfactory.

The use of Edison Primary Battery eliminates this objectionable feature, its average life being about one year, and when a motor is not operated continuously, frequently lasts two and three years on one charge.

The task of renewing has been made extremely simple by the introduction of the new **EDISON** BSCO element, in which the zinc and oxide plates are shipped from the works, assembled in the frames. To recharge, it is only necessary to remove the old element, empty the jar, mix new solution, attach new element to the cover, and the work is done. It would be hard to imagine a process for recharging more free from complexity than that indicated by cut of complete renewal at top of page.

The development of this cell has proven a boon to the average man, whether his engine is used for operating farm machinery, driving a motor boat, or any of the purposes for which gas power is utilized. He can now avail himself of a high-grade wet battery which has been robbed of the disagreeable renewal features common to wet cells, and thereby eliminate troubles that arise from the use of an unsuitable battery.

If your ignition is not satisfactory, better write for catalog, and advise type of engine you are using.

The Cheapest Form of Battery Energy

THOMAS A. EDISON, INC.
261 Lakeside Avenue, Orange, N. J.

"The Automatic"

Four Cycle Marine Engine

is built to meet with the purchaser's expectations. When you buy an engine you anticipate satisfaction. You want a motor that will give efficient service with low maintenance and operating cost.

The Automatic fulfills these conditions, because every part is designed and constructed to eliminate waste power, and to stand up under continuous work. Its high quality has been proved over and over again.

Automatic engines are built in all sizes from 3 to 250 h.p., with one to six cylinders; and are regularly equipped with full propeller outfit. Double ignition---make and break and jump spark, with geared high tension magneto---is furnished with all multi-cylinder engines. Tell us how much horse-power you need and let us send you complete information.

The Automatic Machine Co.

Bridgeport, Connecticut

"SANDS" Sanitary Fixtures
THE WORLD'S STANDARD

THE "BOW" CLOSET PLATE S-2050
(Design Patent Applied For)

Pump rough with finished trimmings, oak seat, N. P. brass post hinges $30.00
Seacocks for supply and discharge, with Strainer, pair 7.50

THE "BOW" CLOSET has heavy vitro-adamant, flushing rim hopper bowl, two and one-half (2½) inch improved combined supply and waste-pump, located at rear and fitted with lever-handle, quick-opening supply valve. This closet is especially designed for use in the extreme bow of small boats and may be installed in a space only 15" x 24".

INSIST ON "SANDS"

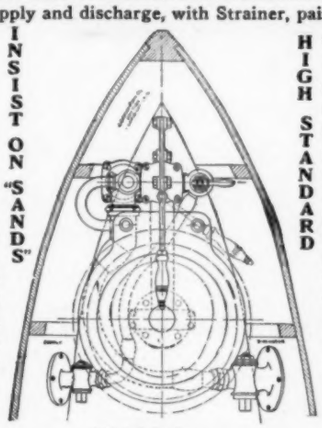


PLATE S-2052.
SUGGESTION FOR INSTALLATION WITH PAIR OF OUR SPECIAL SEACOCKS.

DIMENSIONS: Front to back 23", Width 14", Height 12".
WEIGHT: NET 35 lbs. Shipping 50 lbs.

HIGH STANDARD

THE "BOW" CLOSET is the smallest closet ever made and supplies a world-wide demand. It is fitted with a swinging handle which may be turned to one side when fixture is in use. Strictly a high-grade fixture, perfect in operation, artistic in design and of the finest construction throughout — all working metal parts made of our special, non-corrosive composition.

PLATE S-126

The "Glenora" Composition Flange and Coupling for use on supply and discharge pipe of closets, straight or bent coupling. Bent lead pipe coupling always sent unless otherwise ordered.

Price		
¾	in.	$2.25
1	in.	3.00
1¼	in.	5.25
2	in.	6.00

The "Carlton" Brass Outlet Connection with long nipple and flanged locknut to make up on inside.

Price	Iron Pipe
¾"	1" 1¼"
$1.75	$2.50 $3.75

Price	Lead Pipe
¾"	1" 1¼"
$2.00	$3.00 $4.50

PLATE S-131

PLATE S-150

The "Glenwood" Folding Lavatory, with Vitro-adamant roll rim lipped oval basin, N. P. copper lining, soap and brush holders, N. P. brass pump with combination swing supply faucet, N. P. brass towel rack, N. P. brass supply and waste couplings, N. P. brass trimmings.
Quartered oak, polished finish.$42.50
Mahogany, polished finish, add 1.50

The waste may be discharged into the waste line of the water closet, a waste tank or directly overboard as desired.

Dimensions: Height 20 inches width 19 inches, depth from back to front when closed 6 inches, when open 18 inches, oval basin 15 inches x 12 inches.

This lavatory can be finished to match any interior trim.

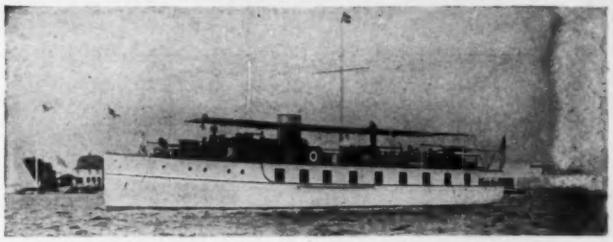
Large Assortment of Closets, Lavatories, Deck Plates, Ventilators, Portlights, Basin and Galley Pumps, shown in CATALOG "R," free upon application.

A. B. SANDS & SON COMPANY

1849 "Pioneers for Over 60 Years" 1913

LARGEST MANUFACTURERS IN THE WORLD OF MARINE PLUMBING SPECIALTIES

22-24 VESEY STREET. NEW YORK, U. S. A.



EDNADA III, shown above, is a 90-ft. houseboat, designed and completed by us nearly two years ago, which originated the type of cruiser-houseboat equally at home inland or along the coast. Draught, 3 feet, 3 inches.

In Florida this Winter there will be six Mathis-built houseboats

of 70-ft. length alone—to say nothing of such other notable Mathis Boats as the 95-ft. cruising houseboat Nahmeoka, the 90-ft. Ednada (shown above), the 77-ft. Lodona and the newly designed, 64-ft. houseboat, which will be a marvel of comfort, compactness and "go-anywhereness."

The 70-ft. Cocopomelo, designed and built by us, created a type so distinctive that Mathis-built houseboats have been the feature of the Florida season ever since. The Lanai (illustrated below), the Lunaria and the recently launched Calabash have perfected this type to a point that assures maximum comfort, speed and ease of handling and moderate operating cost. We have on the ways in Camden two new houseboats of the same size which can be seen, fully furnished, if you will arrange to call.

A visit will well repay you—you will see the final word in boat comfort and the most thoroughly organized plant in America

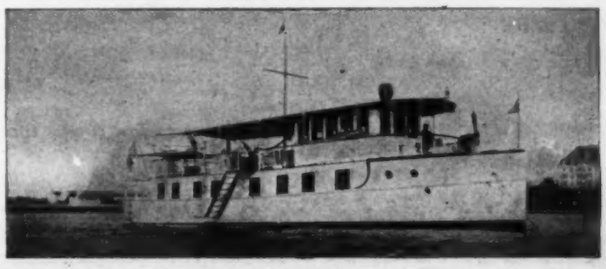
specializing on 60 to 120-ft. Houseboats and Cruisers

MATHIS YACHT BUILDING CO.

Specialists in 60 to 120-ft. Houseboats and Cruisers

COOPER'S POINT CAMDEN, N. J.

Showing the yachty lines of the 70-ft. houseboat Lanai, sold through Messrs. Tams, Lemoine & Crane to Ex.-Com. A. C. James, of the New York Yacht Club. Duplicates in general layout the Lunaria, also built and designed by us. Draught, 27 inches.



Another User of the

Loew Victor MOTOR

Tells His Experience

630 West 147th St., New York, N. Y., Nov. 13, 1912.

The Loew Manufacturing Co., Cleveland, Ohio.

Gentlemen:—The "Amorita" is now hauled out after a very successful season and I thought I would let you know how well satisfied I am with the Loew Victor Motor.

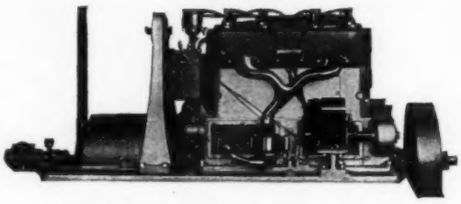
I consider your Model "5" the best runabout motor on the market today. I have always found my rig dependable and it has never failed. When I start out for a spin I feel confident that I will get back, and under my own power. I have given my motor some pretty severe tests—one a non-stop run from New York City to New Haven, Conn. On this trip we covered something over 200 miles without a miss or a particle of trouble. On another occasion I went from New York to Poughkeepsie and while this trip was not as long as the other it was equally severe, for we pushed the motor both going and coming, as it rained most of the way.

I cannot speak too highly of the flexibility of your motor. I can throttle her almost to a standstill and yet she is ready to jump to full speed or reverse.

I have found your double ignition a noteworthy feature, for with both sets of plugs working I obtain about 100 more revolutions than with one set. Wishing your motors the success they deserve, I am

Yours truly,

W. G. RANDOLPH.



Model 5 — Loew Victor Motor

The Loew Manufacturing Co., 1907 Madison Ave., Cleveland, Ohio

MoToR BoatinG Helps the Marine Industry

The influence of a strong trade paper is an important factor in the development of the industry it represents. The continued existence of the publication depends entirely upon its ability to make a place for itself and its value in promoting the welfare of the trade.

MoToR BoatinG has earned its present position of success by consistently following the policy of working in the interests of the marine trade. Prosperity for the trade means prosperity for the organs which support it.

MoToR BoatinG advertises in magazines and newspapers throughout the country to attract readers and these readers it converts into boating enthusiasts, who buy and recommend the products they see advertised in it. It creates business for the industry by increasing the popularity of boating and then directs these customers to the manufacturers who offer the articles which meet their needs.

MoToR BoatinG is a salesman which finds its own customers and induces them to buy. It is a salesman which has the confidence of its customers and to which they look for expert advice. This salesman calls on more than 25,000 persons every month and delivers your selling message to people who are all prospective customers for your product.

Is MoToR BoatinG working for you as a salesman?

J. S. HILDRETH
Adv. Mgr.

MoToR BoatinG

381 Fourth Ave.
New York

This invention marks a new epoch in power boating

The Maxim Silencer for Motor Boats

It works on a boat like it works on a gun

The Maxim Motor Boat Silencer effectively stops the noise of an above water exhaust and is absolutely without back pressure. It actually improves the engine action and increases mileage per gallon of gasoline. Simple, compact and cannot clog with soot, dirt or grease.

The same principle which made the Maxim Gun Silencer world-famous is now successfully applied to motor boats. No more nerve-racking popping noise. You can glide through the water smoothly and quietly. By doing away with the exhaust noise—the most discomforting feature of motor boating—you double your pleasure.

Specify it on your new boat—Install it on your old boat

The Maxim Motor Boat Silencer is easily attached. Made in all sizes.

Any boat, engine builder, or hardware dealer can get it for you, or we'll ship direct if you cannot obtain it in your town.

Write today for descriptive literature

Mention bore, stroke, and size of exhaust outlet when you write.

Wilcox, Crittenden & Company, Inc., Middletown, Conn., U.S.A.

THIS PRIMING CUP GUARANTEED

AGAINST LEAKING, STICKING, SEIZING

ALL SIZES

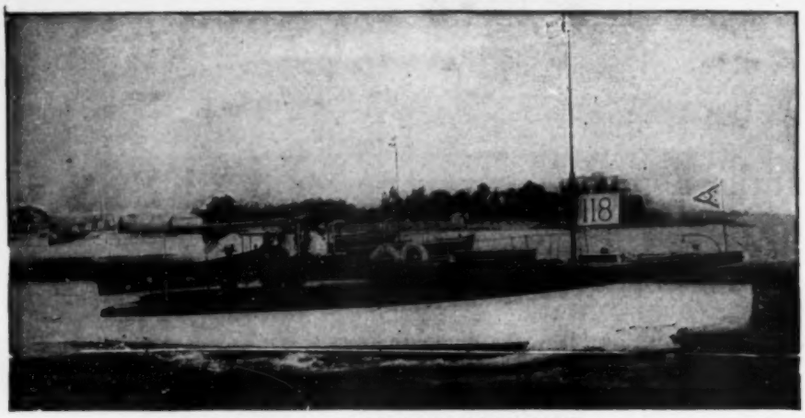
This is a great improvement over any other gas engine cylinder priming cup now in use. Overcomes all troubles and becomes of real value for priming, engine timing, compression release, etc. Made partly from steel so it can't break. Guaranteed against trouble.

Ground in Instantly

This cup is indispensable on every motor. Gives larger opening and requires less clearance than any other. All sizes and several finishes to suit everybody.

Write today for prices

MORGAN MFG. CO., JOHN ST., NEWPORT, R.I.



SPINDRIFT — 30 H. P. RALACO ENGINE

FOR THREE successive years the "SPINDRIFT," owned by Commodore C. R. Butler, of the Albany Yacht Club, has been making an unequalled record in MOTOR BOAT RACING.

In these days of new boats each year, to "beat the rule" or to beat another boat, the wonderful record of "SPINDRIFT" stands absolutely alone.

"SPINDRIFT" has now started on her fourth year by adding the following victories to her already long list:

Colonial Yacht Club's Cornfield Reef Lightship Race—Second Place.
Tappanzee Yacht Club—Grand View-on-Hudson to Hudson, N. Y.—First Place.
Rockland Light and Back—Second Place.
Colonial Yacht Club's Race to Poughkeepsie and Return—First Place.

IN ADDITION TO HAVING WON THE FOLLOWING RACES IN PREVIOUS YEARS:

Oct. 1, 1909, Hudson-Fulton Celebration at Newburgh, N. Y.—First Place.
Oct. 7, 1909, Hudson-Fulton Celebration at Albany, N. Y.—First Place.
Aug. 2, 1910, Lake Champlain Yacht Club—First Place.
Sept. 2, 1910, Ossining, Hudson River Yacht Racing Association—Second Place.
Sept. 21, 1910, National Motor Boat Carnival—Second Place.
Sept. 22-23-24, National Motor Boat Carnival—First Place in Each.
July 4, 1911, Ossining Race—First Place.
July 8, 1911, New Rochelle Race—Third Place.
Aug. 1, 1911, Lake Champlain Yacht Club Race—First Place.
Sept. 6 and 7, 1911, National Motor Boat Carnival, Huntington—First Place.
Sept. 8, 1911, National Motor Boat Carnival, Huntington—Second Place.

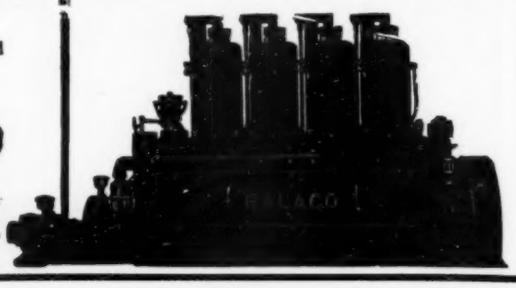
This Record is unequalled by any cruising motor boat in the world.

If you are looking for the same kind of RELIABILITY, and a NOISELESS and ECONOMICAL Engine, investigate

The S. M. Jones Company

Main Office and Factory: 616 Segur Ave., Toledo, O.
New York Office: 136 Liberty St.
AGENTS: A. W. LePage Gasoline Engine & Supply Co., Vancouver, B. C.

RALACO
THE SILENT SIMPLIFIED ENGINE



MoToR BoatinG's ANNUAL BUYERS' REFERENCE AND EXPORT NUMBER

(DECEMBER ISSUE)

Gained 9072 lines of advertising over the same issue of last year.

Motor Boating was the only magazine to show a gain for this big annual issue. The nearest competitor lost 13½ pages.

Motor Boating continues to be the "Fastest Growing Marine Magazine" and unquestionably the best buy, from an advertising standpoint.

Use large space in the big Double Show Number

(FEBRUARY ISSUE)

The number will cover both the Boston and New York Motor Boat Shows. Take full advantage of this unusual issue by using your largest copy.

MoToR BoatinG

J. S. HILDRETH
Adv. Mgr.

381 FOURTH AVE.
NEW YORK

Put a *Kingston* on Your Motor

To get the best service out of your marine motor with the minimum consumption of gasoline, fit it with a Kingston Single Adjustment, Floating Ball Carburetor.

The Greatest Marine Carburetor Ever Invented

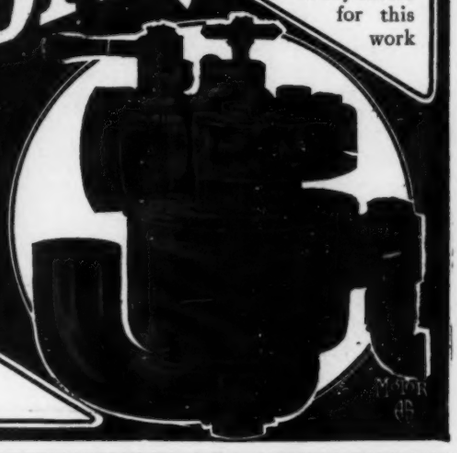
This carburetor will give you the greatest power, speed, economy and reliability possible to secure from your present motor and boat. It is designed especially for the peculiar conditions of marine service and is consequently the best adapted of any device for this work

KINGSTON CARBURETOR

The Kingston has only one adjustment—to vary the proportions of gasoline and air. This is to accommodate different grades of fuel as well as climatic changes. In all other details this carbureter is absolutely automatic.

The supplemental air supply is controlled by five valves covered by bronze balls. The motor suction lifts these balls as required, giving exactly the amount of air needed. Results are always the same because the weight of the balls does not vary as do springs.

There are no springs or dash pots on the Kingston. It will not vary an atom in five months or five years.



Write for our Free Trial Offer and Guarantee

BYRNE-KINGSTON & CO.

KOKOMO, INDIANA

NEW YORK OFFICE, 1733 BROADWAY. CHICAGO OFFICE, 1430 MICHIGAN AVE.
SEATTLE, 520 FIRST AVE., SOUTH. DETROIT OFFICE, 650 WOODWARD AVE.
LOS ANGELES, 504 SO. OLIVE ST.
CANADIAN OFFICE: JOHN MILLEN & SON, MONTREAL, TORONTO, WINNIPEG, VANCOUVER.

"MURDER!"

"Murder!" will be the cry of the future victims of the deep. For at last there is a life preserver on the market that will positively do its work under all conditions. *You* are responsible for the lives aboard your craft.

Send in your order to-day for Smack's Human Life Preservers—then you will rest easier and we will rest easier. Remember! You can upset in a life boat, you can upset in a life belt, but you cannot upset in

Smack's Human Life Preserver!

Price $2.00 each

Smack's Human Life Preserver

Buoyancy is a fine thing when it's in the right place. On land it should be around the heart, in water it should be around the neck. Smack's Human Life Preservers are easily adjusted to any child or adult. Applied in less than ten seconds to any one, they fit right, they stay right. You will do right and wisely in placing your order to-day.

Literature will be mailed to you on request.

HUMAN LIFE PRESERVER COMPANY, Long Branch, N. J.

The Most One

Bridgeport

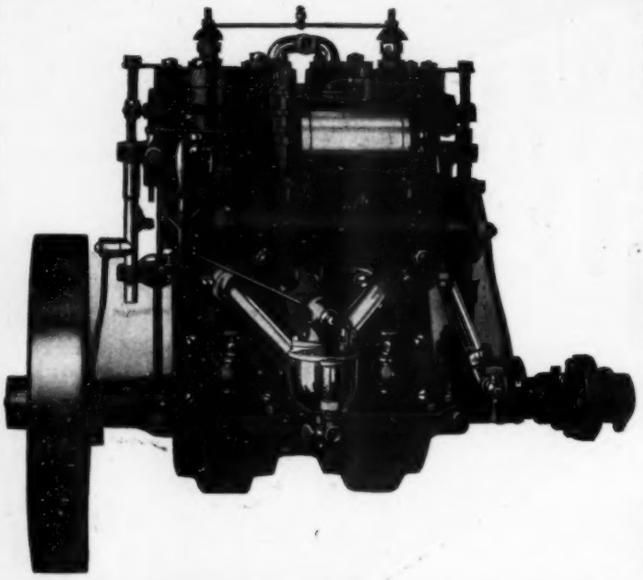
"THE MOTOR THAT MOTES"

Could Wish For

Equipped with the Bridgeport Vapor Rectifier—Absolutely no base explosions—no danger, no stalling at slow speed—flexible control—fuel economy. Our 1913 models fitted with the

BRIDGEPORT OIL TRANSFORMER

may be operated with complete success on



KEROSENE

We are now shipping 1913 models. Make and break or jump spark ignition.

Send for free catalog "B"

THE BRIDGEPORT MOTOR CO., Inc.
BRIDGEPORT, CONN. U. S. A.

Speed Increased 16⅔% Fuel Saved 30%
COYNE BOX TURBINE PROPELLER

Pat. Applied for.

SPEED POWER ECONOMY STRENGTH

Which of these appeals to you?

Of course you want the highest speed and the lowest fuel consumption you can secure, whether you have a launch, cruiser, hydroplane or commercial boat. Here is a way to greatly increase the efficiency of your equipment without changing your boat or installing a new engine.

The Coyne Box Turbine Propeller is destined to revolutionize modern standards of wheel design for all types of boats from the little power canoe to the largest battleship. Actual tests by many experts on the Pacific Coast have shown wonderful results.

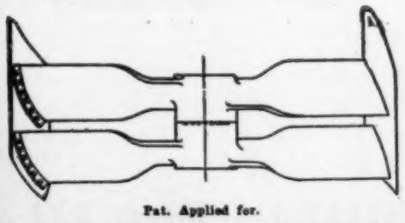
Naval architects, marine engineers, experienced propeller pattern-makers and boat owners who have tried this propeller report many exclusive advantages. Mr. John Wolff, designer of "Oregon Wolf," holder of world's championship for 30 miles against time, is building a Coyne Wheel for his new speed wonder and will also put one on "Oregon Wolf."

Pat. Applied for.

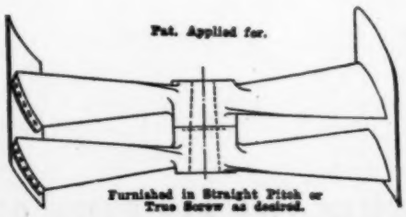
Full information upon application

W. E. S. COYNE,
Coyne Box Turbine Propeller Co.

Grand Union Hotel, Suite 205, Kearny and California Sts.
SAN FRANCISCO, CAL.

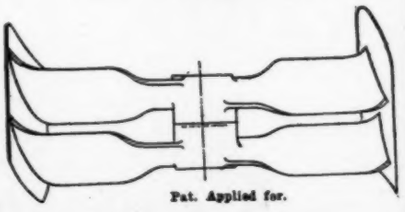


Pat. Applied for.



Pat. Applied for.

Furnished in Straight Pitch or True Screw as desired.



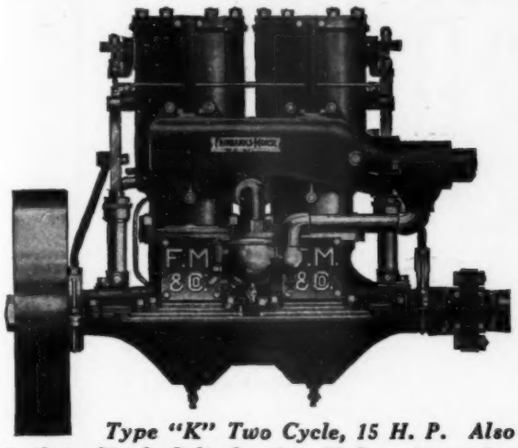
Pat. Applied for.

Fairbanks-Morse Marine Engines

Type "K"

A new, two cycle, heavy duty engine. One and two cylinders developing 7½ and 15 H. P. at 500 r. p. m. Specially designed for

Cruisers, Fishing, and Work Boats



Type "K" Two Cycle, 15 H. P. Also built in Single Cylinder, 7½ H. P. An engine with a number of exclusive features. Built by the oldest manufacturers of internal combustion engines. Agents wanted.

Cannot Base Fire. A simple device found on no other engine prevents base explosions and does not clog or choke engine.

Remarkable for Economy—operates at lower cost than any other of its kind.

Bearings extra large and all removable and renewable.

Accessibility is another strong feature—every part can be reached easily and without special tools.

Lubrication by gravity feed, centrifugal oil ring to crank—or oil in fuel.

Make and Break or self-contained jump spark requiring no battery for starting.

Water does not come in contact with cylinder head gasket but is by-passed through outside connections.

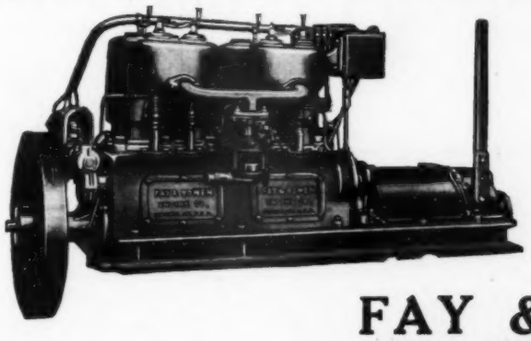
Also build high speed two cycle engines, 3½ to 24 horse power, of strictly modern design.

Write for Catalog No. DB1315, stating size and type of engine you require.

Fairbanks, Morse & Co., **New York, Chicago, San Francisco, or any of our 30 Branch Houses**

The Canadian Fairbanks-Morse Co., Limited, St. John, N. B., Montreal, Toronto. ***Agents for Canada***

A Perfect Power Plant Is Essential to Any Boat



Whether the hull is old or new, cheaply or expensively built, plainly or luxuriously equipped, the power plant should be as perfect as you can buy. A

FAY & BOWEN
UNIT POWER PLANT

meets all the requirements. It is a modern four-cycle engine of the auto type, of a rugged design that will stand up under marine work. Remember, a marine engine must run 95% of the time at its maximum (an automobile runs at maximum only about 5% of the time).

Long stroke. Both intake and exhaust valves mechanically operated. Bosch magneto high tension ignition ("Dual" type). Both mechanical and splash lubrication. Complete aluminum base, including clutch case. Regulation perfect. Fuel consumption very low. Quiet, compact and powerful. Users of these engines will tell you they "bring you home."

We make a full line of sizes—two, four and six-cylinders, and from 10 to 65 horsepower.

We also continue to make our well-known reliable standard two-cycle machines—conceded to be the best engines of their type in the world.

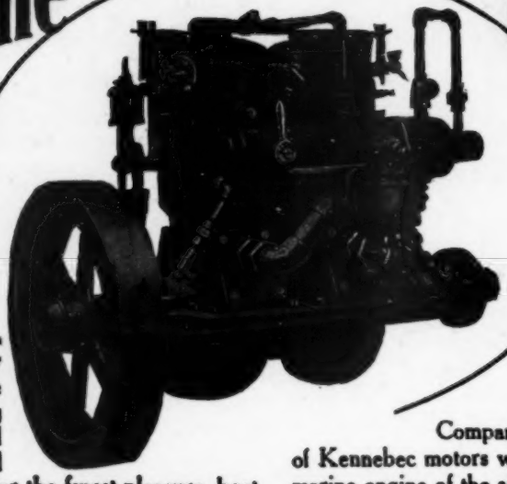
Send for Bulletins and Catalogue.

Whatever you want in a boat or engine for 1913, a moderate-speed family launch, a fast runabout, or the power for either, we can supply. Ask about our 20-mile 32-ft. runabout.

FAY & BOWEN ENGINE CO., 104 Lake St., Geneva, N.Y., U.S.A.

KENNEBEC

Gasoline Engines



KENNEBEC Gasoline Engines are not "rough jewels"—they are "polished jewels" in every respect. They are sturdy enough for the severest working boat usage, and handsome and speedy enough for the finest pleasure boat.

Besides, in the Kennebec you get full-rated horsepower, plus a little bit more. Every Kennebec exceeds its rated horsepower by 30 to 40 per cent. Compare the bores and strokes of Kennebec motors with those of any other marine engine of the same horsepower.

Kennebec, 1 cylinder: 2 H.P., 3⅛" bore and 4" stroke; 3 H.P., 4½" bore and 4½" stroke; 5 H.P., 5" bore and 6" stroke.

Kennebec, 2 cylinder: 4 H.P., 3½" bore and 4" stroke; 6 H.P., 4½" bore and 4½" stroke; 10 H.P., 5" bore and 6" stroke.

Kennebec, 3 cylinder: 6 H.P., 3½" bore and 4" stroke; 10 H.P., 4½" bore and 4½" stroke; 15 H.P., 5" bore and 6" stroke.

Be sure to get horsepower for your money

SEND FOR ILLUSTRATED DESCRIPTIVE PRICE CATALOGUE

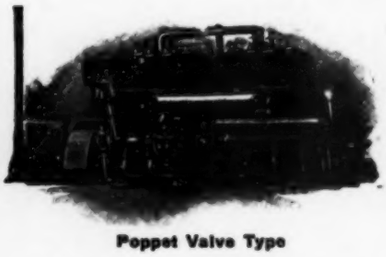
Torrey Roller Bushing Works, Bath, Maine.

ASK ANYONE WHO OWNS A KENNEBEC

TREBERT

RELIANCE PATENTED

GASOLINE ENGINES



Poppet Valve Type

4 Cyl. Poppet Valve Type
Net Prices

4/40	$675.00
4/60	1012.50
6/60	1012.50
6/90	1687.50
4/75, Heavy duty	1400.00

ENGINES FOR SPEED

If you wish to reach the mile a minute speed your boat should be powered with our "V" shape Piston Valve Engine.

8 cyl., 80-100 H.P., weight 650 lbs. complete.
16 cyl., 160-200 H.P., weight 1200 lbs. complete.

8 V-Piston Valve Type

8 Cylinders "V" Shape

Bore 4⅞ x 5, Patented Piston Valve Type. CRANK SHAFT—nickel steel, oil treated; BEARINGS—of special bearing metal; LUBRICATION—is forced through hollow crank shaft by means of a plunger pump; IGNITION—is a Bosch dual magneto; REVERSE GEAR—is multiple disc friction drive. Engine equipped complete, including 1-1½ gear box, shaft and propeller.

Net Price, $1350.00

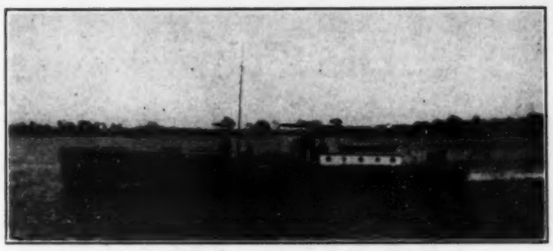
H. L. F. TREBERT ENGINE WORKS, 495 St. Paul St., Rochester, N. Y.

HOLMES LONG STROKE ENGINES

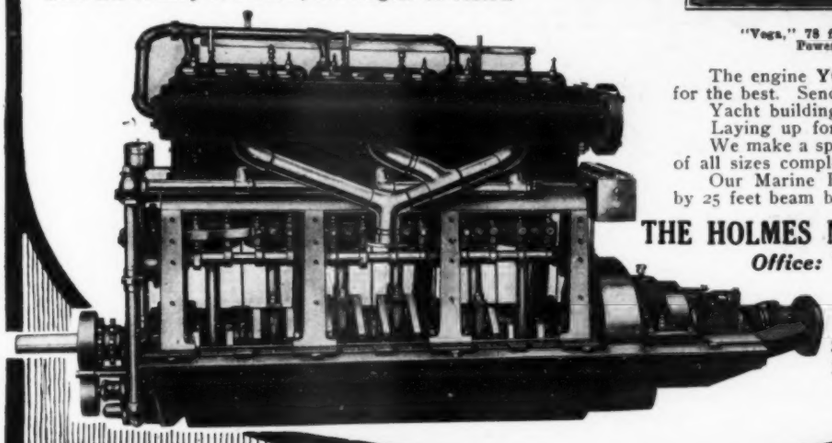
A SIX-CYLINDER 75-H.P. Holmes engine was recently installed in the 78-foot cruiser Vega, displacing an engine with 66% greater cylinder capacity. Our engine weighed only about half as much, but the Vega is now making nearly 15 miles or about 20% more speed, is using less gasoline and has a more durable machine with larger bearings. Our engine is Built for Business throughout.

The engine that has been adopted for the United States Life Saving Service. The engine that will take the clutch from back-up to go ahead instantly on the lowest speed regulation without stalling and without perceptible change in revolutions. Remarkable flexibility.

The engine that won the Halifax International. The only race from one country to another, the longest on record.



"Vega," 78 feet long, owned by Jos. Wharton of Philadelphia. Powered with 75 H.P. Holmes. Speed 15 miles.



The engine **YOU WANT** for your boat if you are looking for the best. Send for 1913 Bulletins with prices.

Yacht building in all its branches.

Laying up for repairs.

We make a specialty of building and equipping power boats of all sizes complete.

Our Marine Railway will haul boats up to 150 feet long by 25 feet beam by 14 feet draft.

THE HOLMES MOTOR COMPANY, Inc.

***Office:* West Mystic, Conn.**

New York Selling Agent:
29 BROADWAY

St. Louis Selling Agent:
3685 OLIVE STREET

CONVENIENT EASY PAYMENT PLAN

THE REITER 1913 SPECIAL

MODEL A WITH COMPLETE EQUIPMENT

Speed up to 9 Miles

Carrying Capacity 9 Persons

Length 16 feet	3 Horsepower	Steering Wheel	Brass Riding Lights	Signal Horn
Beam 4 ft. 2 in.	Seat 9 Persons	Imitation Leather Cushions	Bilge Pump	Complete Kit of
8 Gallon Tank	Canvas Cover	act as life preservers.	Fire Extinguisher	High-Grade Tools

The "Reiter 1913 Special" interior is paneled in Oak, covering exposed ribs, making it much stronger and very attractive in appearance. This model embodies the most up-to-date features in the art of high-priced motor craft. As it is designed by scientific boat builders, it is seaworthy, safe and reliable and will withstand the roughest weather generally encountered.

You will find it greatly to your advantage to write to us immediately, as the above mentioned convenient easy-payment plan is limited to a short time.

Write Today for Full Information About This UNUSUAL PROPOSITION, Together with Colored Illustration of Boat and Details.

J. S. Reiter Boat Manufacturing Company

3033-3039 Monroe Street, Toledo, Ohio

"SHOW TIME is SALES TIME"

The February issue of MoToR Boating

WILL BE THE BIG

Double Show Number

containing full advance information on the two big motor boat shows of the season—

BOSTON SHOW
FEBRUARY 1st TO 8th

NEW YORK SHOW
FEBRUARY 15th TO 23rd

This special number will be without question the greatest show issue of any marine magazine ever published. Every detail of both shows will be thoroughly covered. Never before have so many important events concurred to add to the value of a publication.

As an advertising proposition this is a bargain of more than double value. Every manufacturer, every dealer, every boat enthusiast is vitally interested in one or the other of these shows, if not in both of them. They will all read the Double Show Number of MoToR Boating. It will be of intense interest to all who visit either show and to all who do not see the shows and must enjoy them by proxy through the pages of the trade magazines.

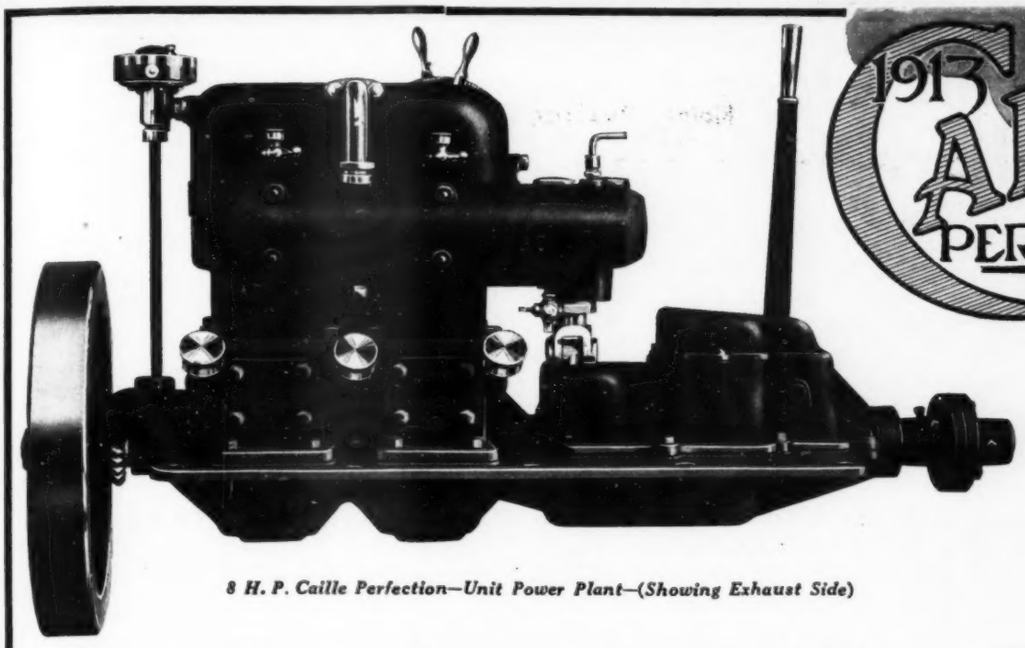
Every article to be exhibited at Boston or New York will be illustrated and described in February MoToR Boating. All the standard products as well as the novelties will be included. A complete journalistic record and forecast of the shows is the editorial policy on which this issue is being compiled.

All the special show arrangements spoken of above are in addition to the regular editorial features and departments of MoToR Boating. Nothing will be neglected on account of the unusual nature of this issue. It will therefore possess a degree of value never before equaled, for both reader and advertiser. Advertising rates will not be increased for this issue.

SEND YOUR RESERVATION AT ONCE

MoToR Boating

J. S. HILDRETH, Adv. Mgr., 381 Fourth Avenue, NEW YORK CITY



1913 CAILLE PERFECTION

8 H. P. Caille Perfection—Unit Power Plant—(Showing Exhaust Side)

$150 Complete Ready to Install

Place Your Order Early If You Want Delivery Next Spring

Many were disappointed this past season because they were unable to get shipment at the opening of the season, owing to the heavy demand for Caille engines, so we suggest that you place your order with our local dealer or direct with factory at the earliest possible moment—specifying exact date of delivery.

The Caille has demonstrated to thousands of owners all over Europe and the United States, its right to the distinction of being the most carefully built double-efficiency engine ever put on the market. In operation and maintenance it is the most economical because of its standardization. The even, smooth and perfect fitting joints and bearings, and the minimum of wear on all working parts, proves the absence of friction and consequent addition of power to the engine.

$500,000 backs the guarantee of every Caille Perfection Motor

Perfection Igniter
was the 1912 Sensation

No batteries, no coil, no magneto, no timer—not one part to get out of order. Simple, waterproof, trouble - proof and reliable, this new ignition system was the sensation of past season 1912.

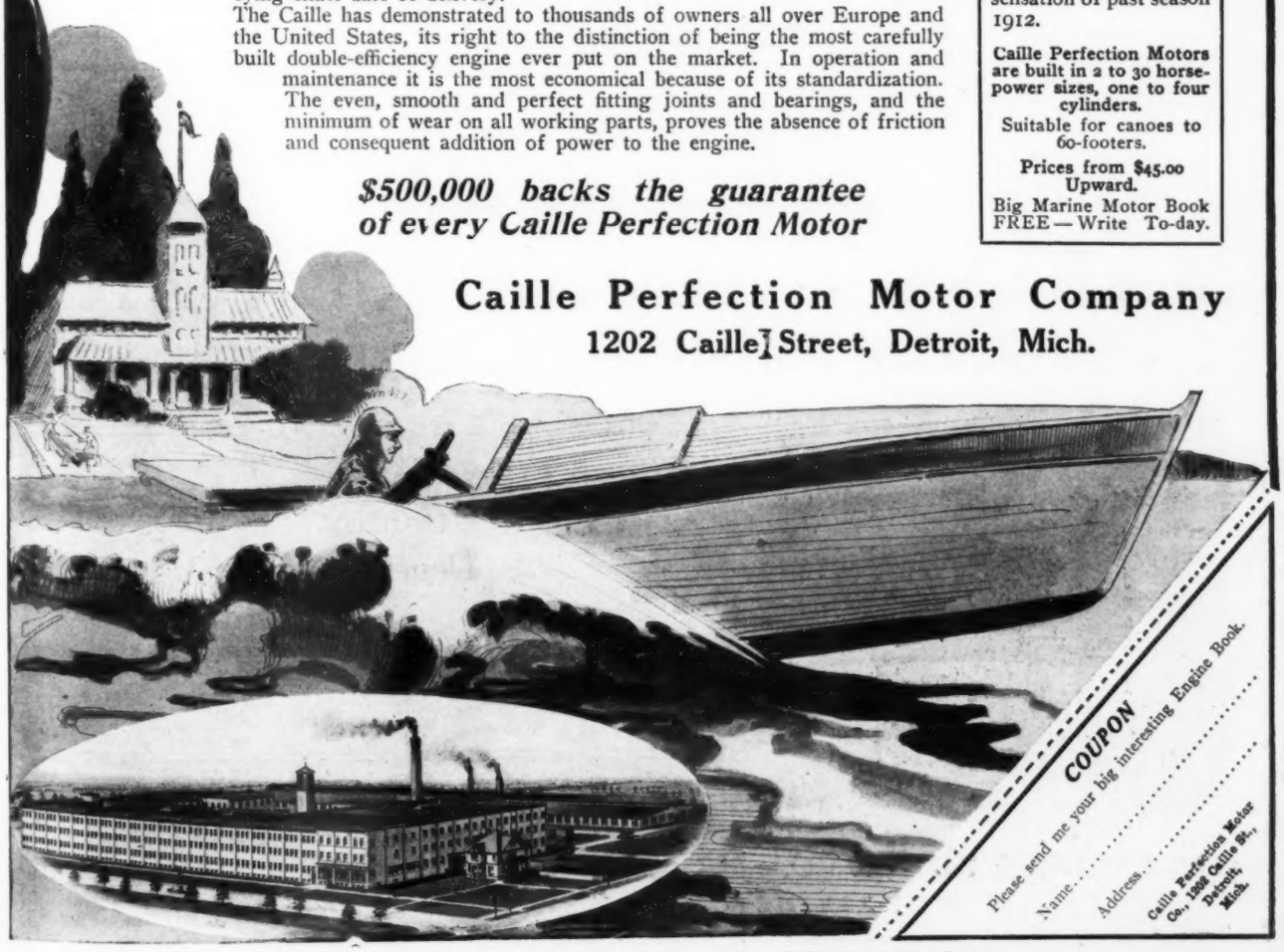
Caille Perfection Motors are built in 2 to 30 horsepower sizes, one to four cylinders.

Suitable for canoes to 60-footers.

Prices from $45.00 Upward.

Big Marine Motor Book FREE—Write To-day.

Caille Perfection Motor Company
1202 Caille Street, Detroit, Mich.



COUPON

Please send me your big interesting Engine Book.

Name.....

Address.....

Caille Perfection Motor Co., 1202 Caille St., Detroit, Mich.

A Detroit Oiler remembers for You

Ordinary lubricators have to be turned on when the engine starts and turned off when it stops. *If you forget*, it means wasted oil or a damaged engine.

You don't have to remember to turn a Detroit Mechanical Force Feed Oiler on or off.

It starts and stops with the engine.

When the engine goes faster, the Detroit delivers more oil—when you go at half speed, the pump feeds only half as much oil.

Always the right amount of oil *and no more*—without any attention from you at all.

The Detroit Force Feed Oiler *insures* you against wasted oil and a damaged engine.

It gives you positive, mechanical, *sure* lubrication that lengthens the life of your motor and leaves you free to enjoy your boat.

There is absolutely no bother connected with Detroit lubrication.

On Sale in Canada by the Canadian Fairbanks-Morse Company

A Detroit Oiler never has to be regulated

It's automatic. Once it is adjusted to your engine, you never have to regulate it. The quantity of oil fed is automatically regulated by the engine speed.

Detroit Force Feed Oilers are made in sizes and styles for *every* kind of gas engine—marine, stationary, tractor, auto, commercial truck and aeronautical.

Capacities, one pint to five gallons, one to thirty feeds, pulley, ratchet, sprocket or gear drive.

Furnished as standard equipment by many engine builders; others are glad to furnish them when specified.

Easily installed with any engine.

Write to-day for Catalog P-64 and full information, stating in what kind of engine you are interested.

Detroit Lubricator Company

DETROIT, U. S. A.

Largest Manufacturers of lubricating devices in the world.

Speedway

MARINE GASOLINE ENGINE

Guaranteed an Absolutely Reliable Production

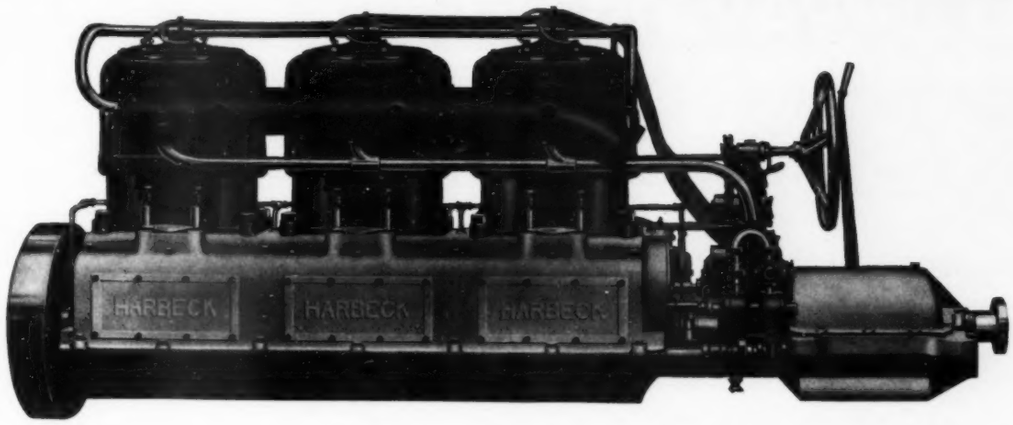
EMBODYING

Uniform Efficiency
Positive Control
Dependability
Easy Starting
Long Life
Silent

Speedway catalogue and instruction book on request

GAS ENGINE & POWER CO. and CHARLES L. SEABURY & CO., Consolidated

MORRIS HEIGHTS, NEW YORK CITY



Unquestionably America's Finest Marine Engine

The advent of Harbeck motors marks a distinct advance in the construction of internal combustion marine engines. For the first time in history have been applied to a marine motor of the size and type of the Harbeck, the great modern business principles of standardization of product and specialization upon a single type. We want you to consider this a personal invitation to investigate the merits of Harbeck Motors. We want you to judge for yourself whether we have produced a motor of which it may be said it is "unquestionably America's finest engine." We are willing that you should be the judge. We are willing to abide by your decision.

HARBECK MOTORS

A Specialized Motor

The Harbeck motor is a medium-weight, four-cycle engine, designed for medium and heavy duty. It includes two models, one of six cylinders and one of four, both having 7½-inch bore and 8½-inch stroke. Horsepowers ranging from 40 to 150 are available.

We have produced:

An engine of symmetrical and well-balanced design, having a distribution of materials such as to give proper strength and rigidity at the point of greatest strain and to eliminate the surplus use of metal at points where strains are not localized. Result, a motor which is lighter per H.P. than any competing engine, capable of delivering its full torque for an equally sustained period.

An engine that is clean in appearance and free from external pipes, rods and accessory connections.

An engine designed with all its accessories, magnetos, pumps, starting devices, controls, etc., placed in a pleasing, compact, accessible group.

An engine which runs clean, free from spurting oil, and yet having all the accessibility of an open-base motor.

An engine in which every bearing may be separately adjusted or replaced without tearing down the engine or removing it from the boat.

An engine which, because of the refinement and lack of ponderousness in design may be installed in the most cramped locations.

An engine having a system of carburetion and manifolding which permits of the greatest flexibility in operation.

An engine which will develop more H.P. than other engines of the same bore and stroke, an accomplishment made possible by the most scientific combination of the factors of compression, carburetion and ignition.

An engine wherein the frictional surfaces are so worked out in regard to areas, and selection of materials, as to make the motor practically wear-proof.

An engine wherein the reciprocating parts are balanced to a nicety and wherein the relation of all moving parts has been so adjusted as to give the smoothest operation. Vibration and noise are largely eliminated—a quiet engine.

An engine having a lubrication system which is trouble free, the only motor having a lubrication system supplied from a large reservoir of cool oil fed infallibly to every working part.

An engine which starts practically without effort. This description applies to either the marine or air starting devices, both of which are provided.

An engine embodying in its transmission number the Hytork clutch, the most efficient and easily handled marine reverse mechanism yet devised.

An engine which, by the combination of merit here recited, gives assurance of the most continued high duty service for the capacity at which it is sold.

Finally—an engine of unfailing service. This is the Harbeck Motor. Back of every claim is a fact upon which it rests. We shall be glad to give you full detailed information concerning either the four-cylinder or the six. We promise you a real revelation in what a marine motor can be. Write today for full particulars.

SPECIFICATIONS

Six Cylinder Engine

Bore—7½ inches.
Stroke—8½ inches.
350 R.P.M.— 75 Horsepower.
500 R.P.M.—108 "
650 R.P.M.—130 "
Weight complete with reverse gear:
With aluminum base .....2650 pounds
With semi-steel base .....3000 "
Price with aluminum base, $3700.00, f.o.b. Chicago.
Price with semi-steel base, $3500.00, f.o.b. Chicago.

Four Cylinder Engine

Bore—7½ inches.
Stroke—8½ inches.
350 R.P.M.—50 Horsepower.
500 R.P.M.—72 "
650 R.P.M.—90 "
Weight complete with reverse gear:
With aluminum base .....2000 pounds
With semi-steel base .....2300 "
Price with aluminum base.....$2500.00
Price with semi-steel base 2350.00

Ignition—Latest type Bosch dual two-point magneto, with jump spark.

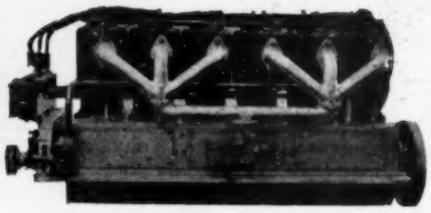
Lubrication—Pressure circulating system exclusive with Harbeck Motors.

Hytork Reverse Gear—Superior to any other type of clutch and reverse gear—cannot slip—no wearing parts.

HARBECK MOTOR COMPANY

C STREET CHICAGO, ILL.

THE INCOMPARABLE THELMA MOTOR



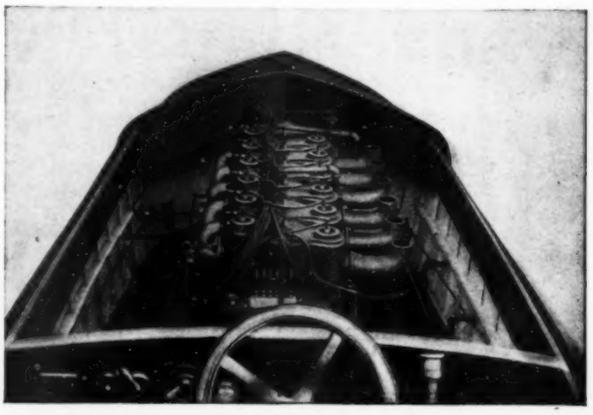
Thelma Six Cylinder Racing Engine
60-70 H. P.

IN speed and power, Thelma Motors have no superiors. Their success is a matter of record. The remarkable series of racing events to their credit must be the result of actual merit. Competition unmistakably shows up the most efficient contestant by the "survival of the fittest."

Boat enthusiasts of the Detroit River recognize Thelma Motors as the most powerful and efficient marine engines made. Wherever they are used the same reputation prevails. Thelma performances are the most persistent and effective advertisements possible.

Thelma Motors are of the most approved four-cycle type. Quality construction is followed throughout the design, materials and workmanship. Every detail has been selected for efficiency, not cost. No better built motors are to be had anywhere.

The principal advantages in Thelma design are the liberal bearings, automatic lubrication and excellent selection of materials. Each part is made to give the maximum of strength and lightness. Simplicity, accuracy of workmanship and accessibility are notable features.



Where the greatest possible power and speed are required, the Thelma Motor should be selected. No marine engine has a cleaner record; none can show a better average of success. Perfect satisfaction is a by-product of Thelma efficiency.

Get a Thelma and You'll Never Be Disappointed.
Write to-day for catalog.

THELMA MOTOR WORKS

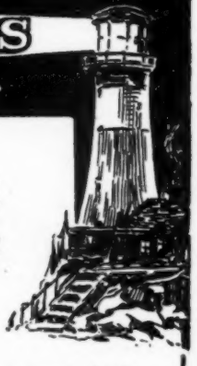
280 Junction Ave., DETROIT, MICH.

High Grade Proposition for Responsible Dealers.
Write for Information.

Act As Your Own Agent—Buy Direct

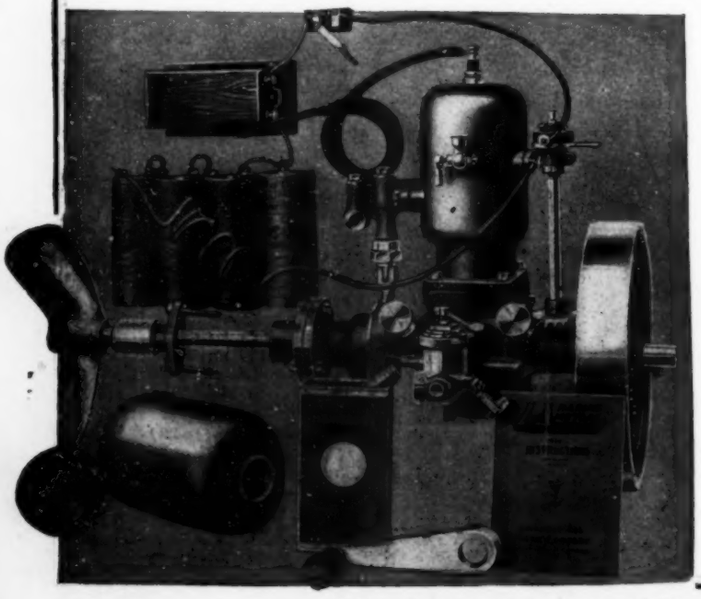
L-A MARINE MOTORS

Built On Honor



Why not be your own agent in buying a Marine Motor? Why not make that profit yourself? If you are satisfied that the engine is just what you want—that it is built right and backed by a sound guarantee, why pay the other fellow for taking your money?

Here's the Famous L-A High Grade Motor That Sells Itself



Without any persuasion, without any smooth talk, without any argument. It speaks for itself—it proves its own merit to you. All we ask is a trial—and that trial at our risk.

ENGINE SPECIFICATIONS—Drop Forged Crank Shaft. Drop forged connecting rod with removable bearings. Vertical gear driven timer, completely enclosed. Lunkenheimer mixing valve (or Schebler carburetor, extra). All bronze, plunger pump. Flange coupling with ball thrust enclosed. 1½ Horsepower.

Direct from Factory to You **$34.75** Complete As Shown **Save a Third $12 in Your Pocket**

Read the specifications carefully, size up the compact design, the convenient arrangement of all parts. You cannot buy such a motor elsewhere for a third more. We cut out the usual selling expenses—deal directly with our customers—and you in turn save the commissions and agents' expenses. Five larger models on same plan.

Equipment

1 Spark Coil
1 Spark Plug
1 Switch
4 Columbia Igniter batteries and battery connectors
Wire and copper terminals
1 Bronze two blade propeller 10½ in. diameter (speed or weedless)
1 Bronze stuffing box and screws
5 ft. steel shaft ⅝ diameter
1 Quart Cylinder Oil
1 Can cup grease
1 Muffler
1 Starting crank

Best of All, We Sell ON 30 DAYS' TRIAL

and a year's guarantee as well. Write to-day for our liberal plan and let us explain how we ship this splendid powerful little Motor anywhere for a month's test at our risk.

LOCKWOOD-ASH MOTOR COMPANY
202 Horton Street **JACKSON, MICHIGAN**

Triplex

Finishes the Work the Carburetor Leaves Half Done

Economizes Fuel

Triplex

Increases Mileage

Triplex

Promotes Flexibility

Triplex

Prevents Back Firing

Triplex

Is Guaranteed to Decrease Fuel Consumption 25%

A Dirty Motor is a Short Lived Motor

Nothing tends to lower the efficiency, flexibility and sweet running qualities of a motor quicker than an improper mixture. Faulty carburetion is the prime cause of carbonization. Carbon clogged cylinders, sooty spark plugs, sap the ambition out of a motor, shorten its service.

Loss of COMPRESSION is caused from Dirt taken into cylinders through CARBURETOR. **THE TRIPLEX MAKES IT AN IMPOSSIBILITY** for DIRT to get into the cylinders. DIRT or DUST acts as a grinding material and causes loss of compression by grinding down PISTON, RINGS AND PITTING OF VALVES.

The Triplex Makes Imperfect Carburetion a Mechanical Impossibility

THE TRIPLEX is a device placed between the **MANIFOLD AND CARBURETOR TO BREAK UP THE MIXTURE**—the fuel.

The **TRIPLEX** will **EQUALIZE** the most **UNEVEN** mixture that leaves the carburetor—make it uniform throughout.

Operating as it does on a tried and proven scientific principle, the TRIPLEX insures a mixture which will burn CLEAN to the last atom. It is a physical impossibility for a bit of live gas to remain unignited. BLACK SMOKE is emphatically done away with—CARBONIZATION forestalled.

A TRIPLEX Will Pay For Itself in Two Months

By utilizing every drop of gasoline to its full capacity, the TRIPLEX makes a saving of over 25% per gallon. It gives you FIVE gallons of gasoline at the cost of FOUR. It makes high-proof gasoline out of low.

Furthermore, it increases power proportionately. The full cylinder charge is ignited every time—the maximum power delivered at the point of highest efficiency. Because there is no fuel waste, there is no power waste. A TRIPLEX is double economy—it INCREASES power at the same time it DECREASES fuel consumption.

Insure Yourself Against Back Firing With a TRIPLEX

Another advantage it possesses is that it prevents FIRING a motor boat or launch due to the fact that any FLAME is cut off in trying to go through the TRIPLEX. The principle is the same as the non-explosive feature of a miner's gauze lamp.

Further advantages are that a TRIPLEX makes starting easier regardless of temperature or atmospheric conditions, and stops suction of live gasoline when the motor is cold.

The TRIPLEX can be readily attached by anyone in one-half hour's time.

The TRIPLEX Is Guaranteed

THE TRIPLEX is guaranteed to do all that we claim for it, or your money back. Therein lies YOUR protection. For further information, write us.

1 inch	$3.50	1¼ inch	$5.00
1¼ inch	4.00	2 inch	5.50
1½ inch	4.50	2½ inch	6.00

To Be Had at All Dealers or Direct on Receipt of Price

DEALERS: Here is one of the fastest selling little devices on the market. Every motorboat or launch owner has got to have one. Big sales spell big profits. Get our sales proposition TO-DAY.

Write or wire us

Bremer - Wilson Manufacturing Co.

1256 Michigan Blvd. CHICAGO, ILL.

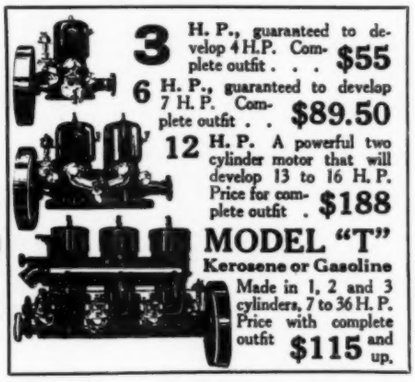
GRAY MARINE MOTORS
Kerosene or Gasoline

Photo shows Mr. J. L. Frigon, the proud winner of the Lake Beauharnois 50-mile championship, and his speed boat "Litta III." This severe test required not only speed but absolute reliability. It was a case of extreme endurance, and the 36 H. P. Grays made good every minute.

"Cheering the Victor of the 50-Mile Race at Beauharnois, Que."

This 36 H. P. is the ***one*** motor we know of that gives wonderfully efficient service in both speed boats and heavily constructed pleasure and work boats.

For example—J. L. Frigon's 25-foot "Jacqueline" won 7 cups—undisputed 3-cylinder champion of Province of Quebec for 1912—36 H. P. Model "T."—Niobrara and South Dakota Ferry Co. operate a big flat bottom 60x20-foot paddle wheel freight ferry—36 H. P. Model "T."—Dr. Louis Le Roy, Memphis, Tenn., made 100 miles in 4 hours flat in his 30-foot "Han't"—36 H. P. Model "T."—Capt. Ralph Nutting, Daytona, Fla., operates a 43-foot heavily constructed passenger ferry with great success—36 H. P. Model "T."



3 H. P., guaranteed to develop 4 H.P. Complete outfit . . . **$55**

6 H. P., guaranteed to develop 7 H. P. Complete outfit . . **$89.50**

12 H. P. A powerful two cylinder motor that will develop 13 to 16 H. P. Price for complete outfit . **$188**

MODEL "T"
Kerosene or Gasoline
Made in 1, 2 and 3 cylinders, 7 to 36 H. P. Price with complete outfit **$115** and up.

The New 1913 Model "T"—36 H. P.

Equipped with Bosch High-Tension Magneto, Rear Starter and Paragon Clutch.

The motor that starts, handles and operates like the highest priced automobile motor.

The Most Accessible Motor Made—a broad claim, but we can back it up with facts.

A cylinder can be removed and reassembled in less than twenty minutes.

Every part "get-at-able."

Big—Long Life—Interchangeable Bearings (let us tell you about its features.)

A lifetime of experience behind it.

The motor that requires no attention except to occasionally screw down dope cups.

No lubricators to watch—can't go wrong—lubricates through gasoline.

Highest grade equipment.

A combination two and three port motor. Can be operated as a two port, a three port, or a combination of the two.

Gasoline or Kerosene Fuel—regular equipment gasoline. However the motor is designed to receive our Patented Gray Kerosene Injector System. Buy a motor that can be converted into a Kerosene Motor at any time you wish and at a very slight expense.

An Absolute Guarantee covering power—workmanship and material—and a big, well-established and responsible concern behind every motor.

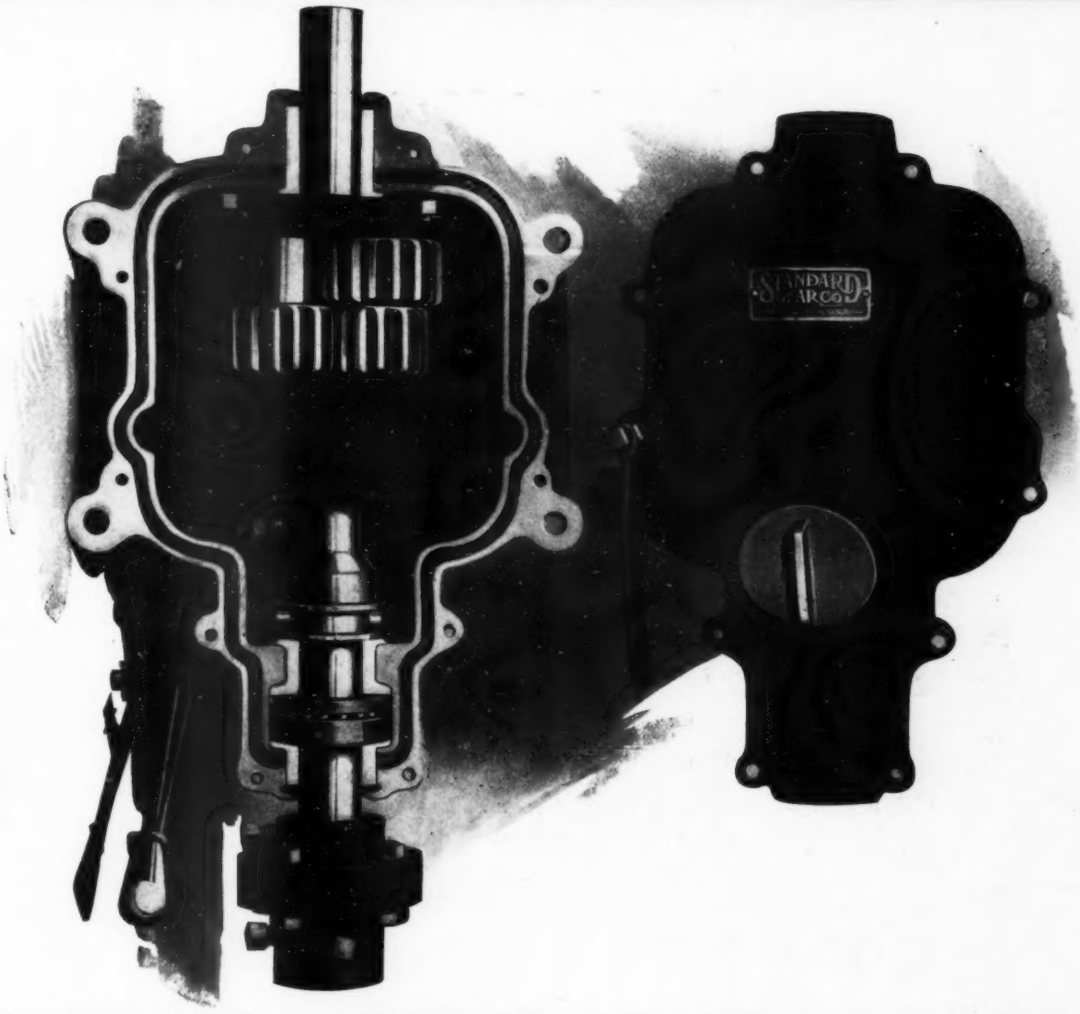
SPECIAL OFFER For a limited time we will make a special introductory offer good for one only of these 1913—36 H. P. motors in every boating center. This special offer will not appear again. Write today and ask for full details.

GRAY MOTOR COMPANY, 174 Gray Motor Bldg., Detroit, Mich.

FORWARD OR REVERSE

The Gear That Will Hold Any Engine

STRENGTH



EFFICIENCY

STANDARD REVERSE GEARS 1913 MODEL

The Simplest—Most Reliable—Most Compact—Most Powerful and The Smallest Perfect Marine Reverse Gear Ever Made. No Noise—No Dirt—No Grease—No Internal Gears—No Chain —No Trouble.

A Reverse Gear to be of value must always be ready for immediate use, absolutely dependable and of such design and material that it will stand the strain of sudden reversing. The Clutch must be so designed and constructed that it will pick up its load gradually when desired or instantly when necessary.

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STANDARD CO.

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DO YOU WANT SPEED, RELIABILITY, EFFICIENCY?

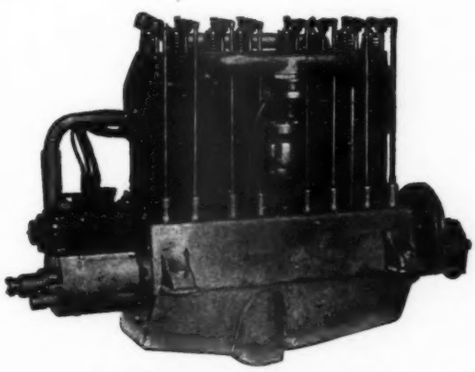
American ingenuity combined with foreign scientific training and years of experience, from the experimental state to perfection, has at last produced the 1913 model of

MAXIMOTOR

in which is combined per pound of weight much *more power* than any other motor manufactured in United States or abroad. It is a wonderful piece of mechanism, built entirely of nickel steel with the exception of cylinders and crank case.

IT WILL PAY YOU WELL TO WRITE US

and learn more about our Motors. Do this now and we feel assured that when you are ready to place your order your choice will be THE "MAXIMOTOR." The 1913 "MAXIMOTOR" is especially adapted for use in *Pleasure* and *Speed Boats*, *Hydroplanes* and *Hydro-Aeroplanes* and may be depended upon under all conditions. In fact it is in a *class by itself*. The 1913 "MAXIMOTOR" family consists of the following models and sizes, any of which can be shipped promptly:



MAXIMOTOR — 4 Cyl. — 4 Cycle
Complete equipment furnished

Model A	4 Cyl.	4½ x 5 in.	40-50	H.P.
" B	4 "	5¼ x 5½ "	60-70	"
" C	6 "	4½ x 5 "	70-80	"
" D	6 "	5¼ x 5½ "	90-100	"

We also manufacture MODEL "E," which is a special 4 cylinder 100 H.P., 6x6 in., and MODEL "F," which is a special 6 cylinder MAXIMOTOR developing 150 H.P. Models E and F can be delivered on 30 days' notice. Responsible dealers will find some desirable territory still open.

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MAXIMOTOR MAKERS
DETROIT

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For The Finest Boat Built Use The Finest Motor Built

Campbell Motors

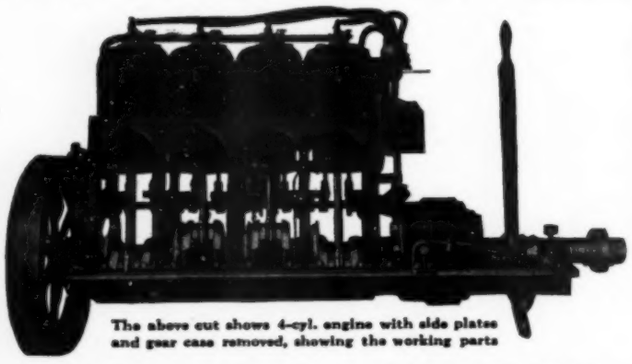
CAMPBELL MOTORS appeal to the man who is looking for the highest degree of perfection in present day marine motor construction. If you consider your boat worthy of the best power equipment made, and appreciate the economy of quality, we have the engine you want.

To get real value in any article you have to pay the price of quality. The Campbell does not compete with low priced motors but nevertheless it offers the greatest service value you can buy, dollar for dollar.

All Campbell Motors are of the four cycle type. We were the first manufacturers to recognize the necessity of building four cycle motors exclusively. The qualities on which the Campbell success has been built are power, speed, reliability, quietness, economy and durability.

The feature of accessibility reaches its highest development in our open base construction. The entire motor can be taken down without disturbing the cylinders or bed. The open base, gives maximum strength with the minimum of weight.

The cast steel frames on which the cylinders rest are made with crankshaft and crankshaft boxes integral so that alignment of bearings must be perfect at all times. Large bearing surfaces and special provisions for easy adjustment of all parts to take up wear mean low repair bills and little time wasted. Reversing gear is built on same base with motor.



The above cut shows 4-cyl. engine with side plates and gear case removed, showing the working parts

Campbell Motors are made in one, two, three, four and six cylinders, from five to one hundred horsepower. They are especially adapted for high speed pleasure and commercial boats.

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Of samples, shopworn, stock boats and engines that we have taken in trade. All big values—big bargains with satisfaction combined. A small deposit secures any of these bargains for you and you pay the balance any time you want the boat shipped. THESE BIG BARGAINS will be snapped up quick. Better telegraph your order in today.

16-ft. Fisherman's Friend. Beam, 4½ ft. Ideal Fisherman's boat, natural wood finish, built with flat floor. Motor, 3 H. P. Speed, 6 miles. $95.00.

Truscott Standard 16'. 3 H. P. motor reversing propeller. Used two seasons. Repainted and overhauled. $125.00.

Truscott Standard 16'. New boat. Perfect condition. 3 H. P. motor, reversing propeller. $240.00.

17' Torpedo Stern Hull. Ideal family boat. Seats 8. Decks and interior beautifully finished oak. $180.00.

Pope Family Runabout 18' x 4' 6". Speed, 7 miles. Seats 8. New boat, slightly shopworn. Motor 3 H. P. T. & M. Exceptional bargain $165.00.

Have another one of these outfits of same dimensions, equipped with 3 H. P. Pierce. $165.00.

Truscott Standard 18'. 5 H. P. motor. Nickel plated brass fittings. Excellent condition. Highly flaked, quartered oak finish. Seats 8. $195.00.

Truscott Tunnel type square stern 18½'. 5 H. P. motor. New but slightly shopworn, completely refinished, overhauled, first class condition. $265.00.

18' Racine Family. Seats 8. Solid mahogany decks, beautiful finish. 6 H. P. double cylinder motor. Reverse gear. Excellent condition. Regular selling price $425.00. Special sale price $260.00.

18½' Torpedo Stern. Hull only. Seats 10. Decks and interior beautifully finished oak. $180.00.

Racine Torpedo Stern, Hull only 19' x 4' 6". Seats 8. Mahogany decks, interior beautifully finished, natural oak. Absolutely new. Excellent value. $180.00.

Truscott Special Runabout 20' x 4' 6". Motor 6 H. P. installed forward. Complete with reverse clutch and automobile control. Decks alternate cherry and pine beautifully finished, natural wood. Interior cypress. Speed 10 miles. Sacrifice at price asked. $285.00.

Have duplicate of above, hull only, slightly used but in first-class condition. $115.00.

20' Runabout, hull only. Model as above with exception motor designed for installation under after deck. New boat. First-class condition. $125.00.

Famous Racine V Transom Runabout 21' x 4' 10". Speed 8½ miles. 6 H. P. Racine motor with clutch and automobile control. Beautiful mahogany decks and interior, in natural wood. Seats 7. $385.00.

Racine V Transom Runabout, hull only, duplicate of above slightly shopworn. First-class condition. $195.00.

Truscott V Transom 21' x 5'. Motor 5 H. P. Beautiful boat. Decks, interior, solid mahogany. Patent adjustable canopy. Seats 7. Slightly shopworn. Excellent condition. $320.00.

Racine Family 21'. 4 H. P. motor. Equipment includes cushions, swing awnings. Seats 10. Mahogany decks, finely finished, interior natural oak. Exhibit boat. Excellent condition. Regular selling price $525.00 with equipment as specified. Special sale price $350.00.

Pope 22' special. Latest style fast family runabout. Oak finish. A new boat. Seats 8. Speed 9 miles. Regular selling price $500.00. Special sale $360.00.

Set of 22' Runabout Pioneer Knock Down Frames built in accordance with the Pioneer Perfect Frame System. Nothing easier to construct. Regular price $40.00. Sale price $20.00.

Truscott fast 22½' x 4' 6", hull only, used two seasons. Entirely rebuilt, refinished. In good condition. Seats 6. Exceptional bargain. $130.00.

22½' Torpedo Stern Hull. Seats 14. Decks, interior beautifully finished oak. $280.00.

Racine Family 25' x 6'. Speed 8 miles. Seats 18. Excellent seagoing model. 6 H. P. motor with reversing clutch. Used one season, demonstrating purposes. Repainted, overhauled. First-class condition. $350.00.

Torpedo Stern Family 25' x 5' 6". Speed 10 miles. Seats 16. Absolutely new boat. Exhibited last season in Branch Store. Ideal outfit for livery purposes, handsomely finished decks and interior natural wood. 10 H. P. T. & M. motor with reversing clutch. Real bargain. $490.00.

Truscott Raised Deck Cruiser 28' x 7'. Speed 9 miles. Splendid cruising accommodations. 10 H. P. 4 cycle motor fitted with reversing clutch and latest improvements, one man control. Completely equipped with cushions, ice-box, water closet, linoleum on floors. Exhibition boat in excellent condition. $840.00.

We have another one of these outfits of same dimensions, equipped with 10 H. P. motor. Exhibition boat. Excellent condition. Regular selling price $1200.00 Special sale price, $745.00.

Truscott Gentleman's Runabout, hull only, 28' x 4' 9". Control arranged for one man with throttles, starting device on control bulkhead. Interior and decks beautifully finished solid mahogany. In perfect condition. Exceptional opportunity to secure a luxurious runabout. $680.00.

Speedster, hull only. 28' x 4'. Exceptionally fast. Hull finished white, decks canvas covered. Finished dark green. Interior passenger cockpit, mission oak. New boat, slightly shopworn. Serviceable and substantially constructed. $290.00.

28' Truscott Semi-speed Runabout. Mahogany finish. 4 cylinder 4 cycle motor. Speed 12 miles. Seating capacity 8. Demonstrating two seasons and in fair condition. Regular price $1200.00. Special sale price $420.00.

31' Racine De Luxe motor boat. Beam 6' 5". Speed 14 miles. Used three weeks last season. Exceptional beautifully finished boat. Interior passenger cockpit, coaming, covering boards solid Honduras mahogany, decks, white pine. Motor compartment entirely isolated from passenger cockpit. Seating capacity 10. Motor 4 cylinder Loew Victor 1912. Reversing clutch, mechanical force feed oiler, complete automobile control, rear starting device on motor compartment bulkhead. Polished brass trimmings, automobile top, sailing lights, four large wicker chairs, complete salt water fittings, flags, all equipment complete for use. Outfit sells regularly $2200.00. Special sale price $1600.00. All up-to-date features and nothing finer ever built.

16' Racine compromise stern. Beam 4' 6". Seats 8. Racine single cylinder engine, reversing propeller wheel. Mahogany decks. Polished brass trimmings, salt water fittings. High grade throughout. Beautifully finished and appointed. Regular price $325.00. Special sale price $225.00. Big value.

36' Racine Cruiser (the one every yachtsman knows). *Hull only*, with electric lights, dinghy and complete cruising equipment. Exhibition boat beautifully finished. All water and oil tanks installed, also propeller and shaft ready for engine. Regular price, New York City $2160.00. Special sale price New York, $1500.00. Someone will make $660.00 on this real bargain.

36' Racine Cruiser (another of these famous ships) used one season for demonstrating. Is being overhauled and refinished and will be as good as new for all practical purposes. Complete cruising equipment to regular printed specifications. 4 cylinder Loew Victor Motor. Electric light, dinghy, etc. Regular price at factory $2500.00. Special on this one $1600.00. A good buy.

A quantity of shopworn rowboats and canoes, we are sacrificing at cost. Write for particulars.

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All New Machines unless otherwise specified.

6 Cylinder V Type Truscott 4 x 5, without magneto or carburetor	$240.00
4 Cylinder 4 cycle Truscott 3¾ x 4½, fitted with reversing clutch, Kurtz Magneto, Biddison Mechanical Oiler, and Schebler Carbureter, used for exhibition purposes	425.00
2 Cylinder 2 cycle Racine 5 x 6, with reverse clutch, carbureter	220.00
2 Cylinder 2 cycle Racine 4 x 5, with reverse clutch	115.00
4 Cylinder 2 cycle Simplicity 4½ x 4, J. S. Ignition	290.00
2 Cylinder 2 cycle Simplicity 5¼ x 4½, J. S. Ignition	180.00
2 Cylinder 4 cycle Truscott 4½ x 5, Mechanical Oiler	315.00
2 Cycle Pierce 4 x 4, J. S. Ignition	85.00
2 Cylinder 2 cycle Racine 4½ x 5½, with reversing clutch, carbureter, J. S. Ignition	180.00
2 Cycle Racine 5 x 6	95.00
2 Cycle Racine 4½ x 5½	48.00
2 Cycle Racine 4 x 5	48.00
2 Cycle Truscott 6½ x 6½, sight feed lubricator	95.00
3 Cylinder 2 cycle 18 H. P. Wolverine Motor, Second hand	140.00
2 Cylinder 4 cycle Truscott 5¼ x 6, Michigan clutch, chain driven cam shaft	280.00
4 Cylinder 4½ x 5 Auto Marine Truscott Aluminum Crank Case	165.00
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2 Cycle Old Model Truscott 4 x 4, Second hand rebuilt	35.00
2 Cycle Old Model Truscott 4½ x 4½, Second hand rebuilt	43.00
2 Cycle Old Model Truscott 5½ x 5½, Second hand rebuilt	53.00
2 Cycle Truscott 6 x 6, 1913 Second hand rebuilt	53.00
2 Cycle Toppan Simp. Motor 4½ x 4½	57.00
2 Cycle Toppan Simp. Motor 5½ x 5½	68.00
4 Cycle double opposed 110 V direct connected lighting plant 50-16 C. P. Carbon lamp capacity	467.00

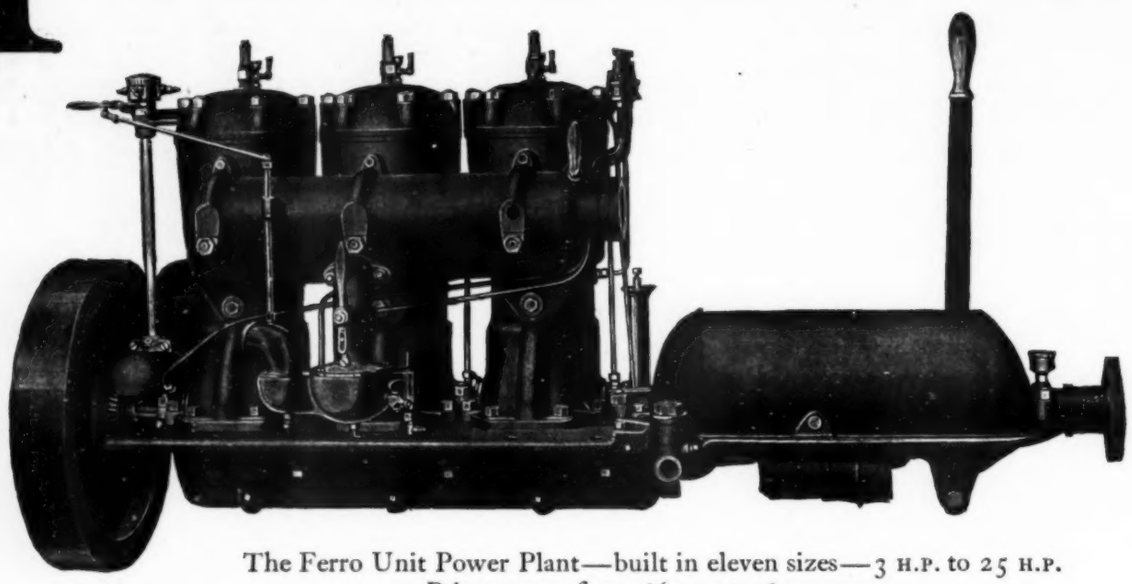
Some of these bargains are at our Factories Muskegon, St. Joseph, Shell Lake and some at our branch agencies and can be inspected any time. Remember you take no chances in dealing with us, as every outfit is guaranteed and we cannot afford to sell you anything but satisfaction. Make your reservation today and address

Racine Truscott Shell Lake Boat Company, Lakeside, Muskegon, Mich.

LIVE AGENCIES WANTED IN ALL UNOCCUPIED TERRITORY

The World's Standard

FERRO



The Ferro Unit Power Plant—built in eleven sizes—3 H.P. to 25 H.P.
Prices range from $60.00 to $500.00.

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Users say So—Sales Prove It!

GUARANTEED to develop more actual horsepower at its rated revolutions than any other engine of similar size, bore and stroke operated under identically similar conditions.

This guarantee is backed by a company of established reputation both as to the quality of its product and its financial responsibility, owning and operating the largest, most complete and best equipped engine plant in the world.

1500 Sales representatives scattered in every country and in almost every port in the world emphasize what FERRO SERVICE means to the 40,000 owners and operators of Ferro Engines.

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Let us give you the name and address of our nearest dealer.

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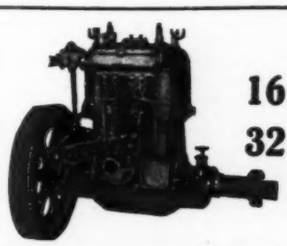
50 MILES PER HOUR GUARANTEED

A 200 H.P. 20 FOOTER NOW READY FOR IMMEDIATE DELIVERY

WE WILL SHOW A SPEED OVER THE GOVERNMENT'S OFFICIAL COURSE, AT WASHINGTON OF FIFTY MILES AN HOUR OR OVER OR NO SALE. LATEST TYPE EMERSON MOTORS. PRICE RIGHT.

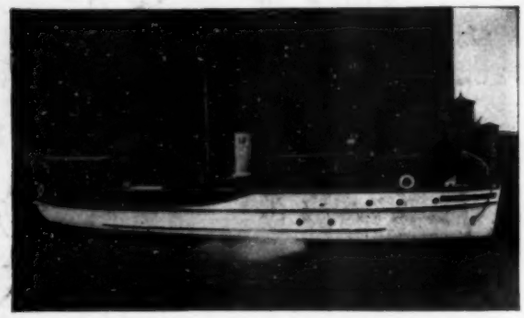
The unequalled performances of such boats as Emerson, Sand Burr II, Lolande, Cuyote, Tiny Tad, Pee-Vee-Ho, Al-Par-Nel, Fawn II, Leading Lady, Eel, Potlach Bug, Squaw, Emerson Jr. and 100 others in winning many of the important events of the country, necessitated our building the greatest engine shop in the U. S., to enable us to take care of our business. Our 1913 models are now ready for immediate delivery, and to substantiate their supremacy we invite competition regardless of power.

For speed write for Catalogue S

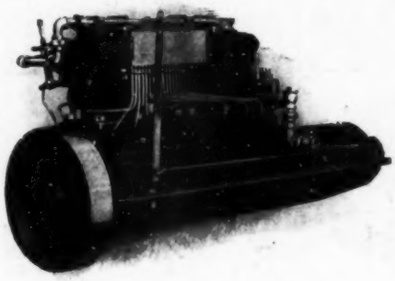


16 to 20 H. P. $250
32 to 40 H. P. $500
(Catalogue B)

THE EMERSON ENGINE COMPANY
ALEXANDRIA, VA.



The U. S. S. Capt. J. J. Meyler, built for inspection service in Florida from government specifications.



One of the two 36 H. P. Buffalo engines which power the Meyler. They have 7-inch bore and 9-inch stroke.

Uncle Sam Is "Engine Wise"

WHEN the United States government places an order the purchase is based on specifications prepared by someone who has made that particular thing a life study. This is true no matter whether the commodity is a submarine or a can of baking powder.

Uncle Sam selects the best—not on hearsay, not because the salesman is a nice fellow, but BECAUSE THE ARTICLE IN QUESTION TESTS UP NEARER TO THE 100% STANDARD THAN ANYTHING ELSE OF ITS KIND.

That is why two 36-h.p. "Buffalo" Heavy Duty engines were specified for the United States inspection boat Capt. J. J. Meyler, built by the Matthews Boat Co., Port Clinton, O., from government specifications. THEY WERE THE BEST FROM A STANDPOINT OF GOOD VALUE, RELIABILITY AND ECONOMY, and the men who drew the specifications knew it.

The Meyler is just one of many government boats powered with "Buffalo" engines,—for Uncle Sam is "engine wise."

The Engine of Constant Service

THE NEW "BUFFALO BOOK"

The new "Buffalo Book" will be off the press Jan. 1.
It tells the whole story of our line of four-stroke marine engines—3 to 150 h.p.—and how they can be operated on either GASOLENE or KEROSENE.
It gives much valuable information concerning the selection of a power plant for work boat, speed boat, launch or cruiser. Shall we send it?

BUFFALO GASOLENE MOTOR CO., 1274-1286 Niagara Street, Buffalo, N. Y.

"My Most Satisfactory Season Afloat"

A Characteristic Expression From the User of a

Marine Engine

NEW ROCHELLE YACHT CLUB
Harrison Island, Echo Bay
New Rochelle, N. Y.

Lamb Engine Co., New York. *September 30, 1912.*

Gentlemen:

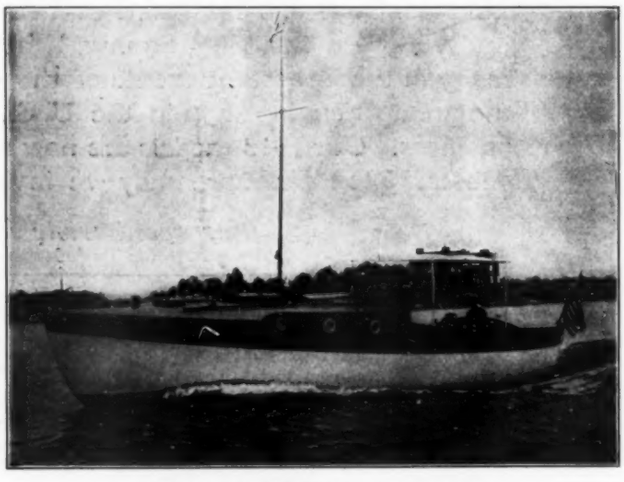
Having finished my most satisfactory season afloat, I cannot go into winter quarters without conveying to you my thanks for the large part of the pleasure which the Lamb Motor you installed in my power boat "Hopalong," last July, contributed.

The motor was tested under all possible conditions of weather and sea — four days of slowest possible speed in the Champlain canal, being one of the tests — and it never so much as coughed back.

To my friends and acquaintances I say, if you want the real thing in Marine Motors, go to the Lamb.

In future afloat, I shall be like Little Mary ashore, "and everywhere that Billy went the Lamb was sure to be."

Truly yours,
WM. KING, JR.



"HOPALONG"—MR. WM. KING, Jr., OWNER
37' O. A. 9' Beam. 3' Draft, 18 H. P. Lamb Motor, Speed 10 Miles

Lamb Marine Engines are of the long stroke four cycle type. The quality in both design and workmanship is the finest that can be produced. Recognized standard marine engine practice prevails in every feature. The details of construction, however, are a secondary consideration. It is the power, quietness, reliability and freedom from troubles which have earned for Lamb Engines a reputation unsurpassed.

10 Models. High Speed, Medium Duty, and Heavy Duty Types. All Four Cycle. Two, Three, Four and Six Cylinders. Twelve to Sixty-Seventy Horse Power. Write for latest catalog.

Manufactured by Lamb Boat and Engine Co., Clinton, Iowa

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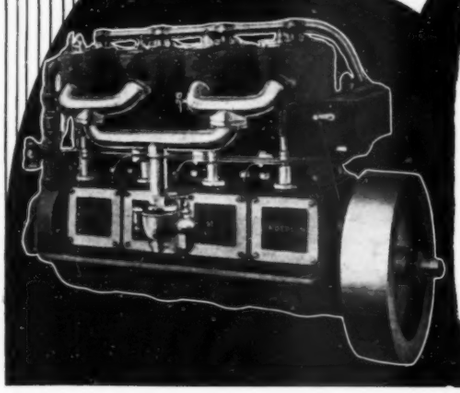
Anderson ENGINES



THE ENGINE FOR YOU

The ***Anderson*** Engine is always ***ready*** — always ***willing*** — always ***able.*** In calm or in storm — in fresh water or in salt water — at ***any*** speed — under ***all*** conditions it ***always makes good.***

Let us prove to ***you*** that ***the Anderson Engine is all we claim for it.***

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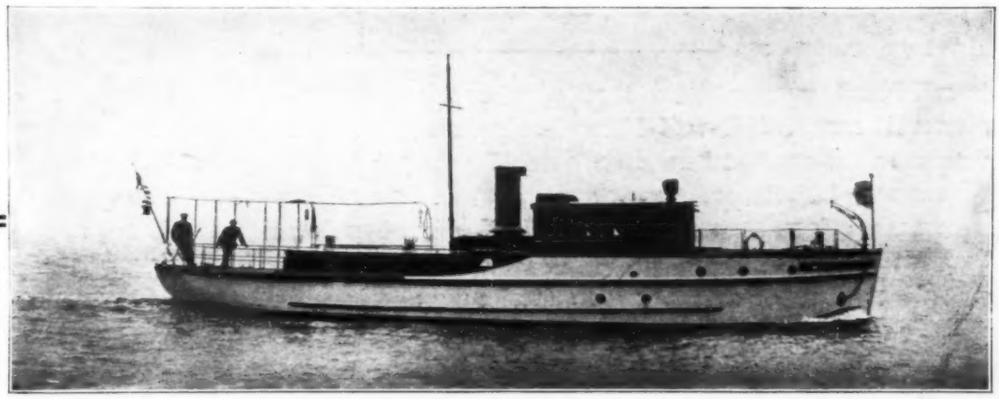

70 FT. x 14 FT. CRUISER, CAPT. J. J. MEYLER.

Designed by the U. S. Engineer's Office, and equipped with two 36 H. P. Heavy-Duty BUFFALO motors.

This is the fifth cruiser of this size and type which has been built by us for the War Department. This boat will be used by the U. S. Engineer's Office at Jacksonville, Fla., in inspection service.

The Matthews Boat Company, CRUISING YACHTS OF QUALITY **Port Clinton, Ohio**

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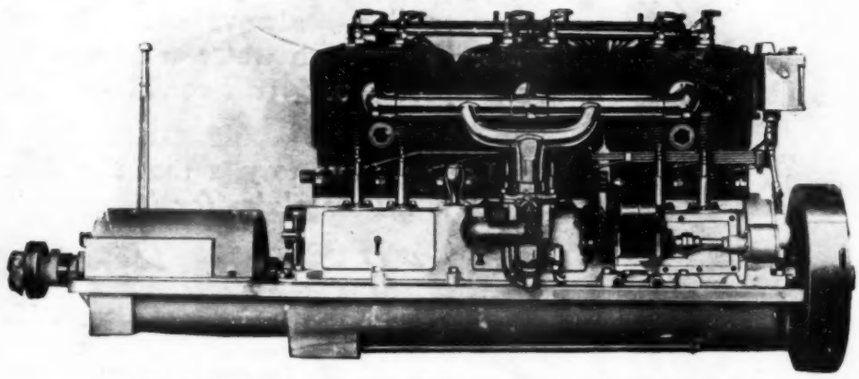
Sterling

THE ENGINE of REFINEMENT

For the

finest boats that float



Six Cylinder, Model B, Medium Duty and Speed Engine.
45-75 H. P. Bore 5½ inches; Stroke 6 inches

Mechanically Correct

IT'S the Best That Can Be Said of Any Engine. Designed and Built in the Most Modern of Shops, it is Backed by the Name of STERLING,—the Strongest Guarantee in the World.

FOR Satisfaction's Sake, See That Your New Engine Bears That Name. We Build Four Cycle Motors in 12 Sizes for ***Speed, Medium Duty, Heavy Cruising*** and ***Commercial Work,***—8 to 150 Horsepower.

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ROCHESTER, N. Y., HALL GIBSON CO., 16 CORTLAND ST.

CHICAGO, WARREN SALES CO., 1413 MICHIGAN AVE.
ST. LOUIS, GRANT C. MARSH, 6800 S. LEVEE
TACOMA, WASH., NICKERSON, MACFARLANE MACHINERY CO.
SEATTLE, WASH., RACINE BOAT & AUTO CO., POLSON BLDG.
HOUSTON, TEX., BARDEN ELECTRIC & MACHINERY CO.
VANCOUVER, B. C., HOFFAR MOTOR BOAT CO.

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